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NOVEMBER 2023

1. IMPORTANT TOPICS OF THE MONTH

1.1 Uttarakhand Tunnel Collapse

Why in news?

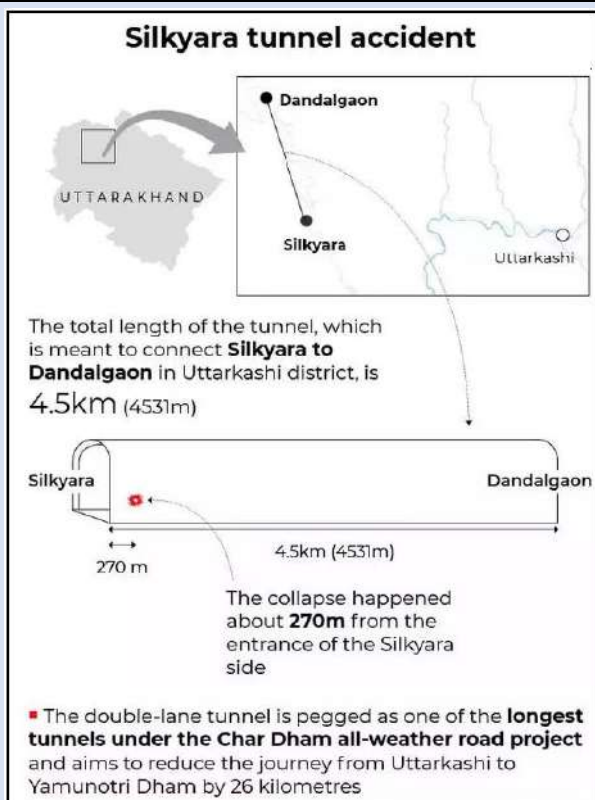
All 41 workers trapped due to the collapse of an under-construction Silkyara-Barkot tunnel in Uttarakhand were rescued recently.

What are the possible reasons for the collapse of the tunnel?

- The collapsed section is located around 200-300 metres from the mouth of the tunnel.
- Loose patch of rock** - It could have happened due to a loose patch of rock, which wasn't visible during the construction.
- The patch might have consisted of fractured or fragile rock with a lot of joints that may have made it weak.
- Water seepage** - Water could have entered through loose patch, eroding the loose rock over time creating a void on the top of the tunnel, which can't be seen.

- Location**- The 4.5-km tunnel is being constructed between Silkyara and Dandalgaon on the Brahmakhal-Yamunotri portion of the National Highway.
- It is a part of the [Char Dham](#) all-weather road project connecting 4 sacred sites of Hindus.
- Chardham Mahamarg Vikas Pariyojana** is a Central government initiative to improve the road connectivity of 4 sacred sites in Uttarakhand - Gangotri, Yamunotri, Kedarnath and Badrinath.
- Aim**- To upgrade and widen the 1100 km of highways into all-weather roads.

Silkyara-Barkot Tunnel



- Shear zone**- It is created when there is movement between two rocks and the rock gets crushed.
- This crushed rock can change its behaviour, it may have clay, or it may get weathered over time.

How the tunnel can be excavated?

Excavation Methods		
	Drill and Blast method (DBM)	Tunnel boring machine method
Description	Involves drilling holes into the rock face and blasting it with explosives to break it into fragments	Involves a shielded machine that bores through the rock with a rotating cutter head
Tunnel length	Adopted for shorter tunnel range up to 3km	Adopted for long tunnel up to 25 km
Suitability	For hard rocks and high mountain tunnel	For soft rock and low mountain tunnel
Environmental impact	Causes more vibrations, noise, dust, and gas emissions	Faster, safer and environment friendly than DBM

Cost	Cost effective for shorter tunnels and smaller projects	Requires high initial investment and more technical expertise
Example	Himalayan regions including Jammu & Kashmir and Uttarakhand	Underground tunnels for the Delhi metro

- **Rescue operation-** Defence Research Development Organisation (DRDO) deployed the Remote Operated Vehicle - Daksh that is specifically designed to be used on a pan-tilt platform to help reach the risky terrain.
- It can operate continuously for 3 hours, covering distances ranging from 100 to 500 meters.

What are the challenges in constructing tunnel in Himalayan region?

- **Young mountain-** Himalayas are still growing due to the collision between the Indian and the Eurasian tectonic plate.
- **Geological complexity-** They are characterized by a complex combination of rock types, fault lines, and seismic activity.
- **Extreme weather variations** - Heavy snowfall and freezing temperatures in winter to intense monsoons and landslides during rainy season significantly impact tunnel construction projects.
- **High altitude-** The challenges include logistical complexities, limited accessibility and increased transportation costs for manpower and construction materials.
- **Seismic vulnerability-** The Himalayas are situated in a seismically active zone, making earthquake preparedness a top priority during tunnel construction.

What lies ahead?

- Guidelines on safety practices in tunnel construction prepared by the International Tunnelling and Underground Space Association say that particular attention should be given “to the means of escape in an emergency situation in contingency planning”.
- Periodic monitoring of the tunnel construction is important.
- Time and resources must be spent on studying the rock before starting the tunnel project.

Related links - [Sikkim flash floods](#), [Joshimath crisis](#)

1.2 Role of Governor in Giving Assent to the Bills

Why in news?

Recently, the Tamil Nadu government has challenged the actions of its Governor, R.N. Ravi, in the Supreme Court.

What is the issue?

- **Governor's inaction-** The Governor has stalled the administrative machinery by not cooperating with the State government.
- **Constitutional deadlock-** Governor is not granting approval to crucial order and bills like appointment of the Public Service Commission Chairman and Members and the [prosecution of Ministers](#) and MLAs involved in corruption cases.
- **Demand of the petition-** The petition seeks a declaration from the Supreme Court that the Governor's refusal to act on the advice of the Council of Ministers is illegal and arbitrary.
- It also appeals for a time limit within which the Governor must consider pending bills and orders for balance of power between the State legislatures and the Governor's office.

What is the role of Governor?

About	Description
Articles 153	There shall be a Governor for each State.
Executive authority	Governor is a nominal executive head (titular or constitutional head)

7th Constitutional Amendment Act, 1956	It facilitated the appointment of the same person as a Governor for two or more States
Office of Governor	The Governor is appointed by the Centre (Canadian Model)
Appointment (Article 155)	By President under his seal and warrant
Oath of office	Administered by the Chief Justice of the concerned State High Court. In his/her absence, the oath is administered by senior-most judge of that court available
Tenure	5 years, subject to the pleasure of the President
Resignation	Addressed to President of India
Legal immunity (Article 361)	Governor cannot be summoned for questioning except on his/her voluntary willingness to testify in the court in support of his/her controversial deeds.

What about the Governor's role in giving assent to Bills?

- **Article 200-** When a Bill passed by the legislature of a State is presented to the Governor, the Governor has 4 options.
 - Grant assent to Bills
 - Withhold assent to Bills
 - Return the Bills for reconsideration
 - Reserve the Bills for the consideration of the President
- **Suspensive veto-** The return of any Bill to State Legislature for reconsideration is also to be done based on ministerial advice.
- If the bill returned by the Governor for reconsideration is passed by the House again with or without amendments and presented to the Governor, the Governor must assent.
- **Reserved for President-** Governor may exercise their discretion, where they feel that the provisions of the Bill will contravene the provisions of the Constitution.
 - Bills reducing the power of the High Court
 - Bills on concurrent list that are repulsive to a Union law based on ministerial advice.
- Governor will not have any further role when the bill is reserved for President's consideration.
- **Money Bill-** Governor cannot return the Bill for reconsideration, and gives his/her assent as it is introduced in the State Legislature with his/her previous permission.
- **Private Member's Bill-** The Council of Ministers may advise the Governor to withhold the assent to the Bill.
- **Power shift-** If the incumbent government whose Bill has been passed by the legislature falls or resigns before it is assented to by the Governor, the new Council may advise the Governor to withhold assent.
- **Pocket veto-** The Constitution does not lay down any time limit within which the Governor is required to make a decision.

Recommendations of Various Commissions
<ul style="list-style-type: none"> • Sarkaria Commission- Governor should reserve the bill only under rare cases of unconstitutionality and he should follow ministerial advice. • The President should act on the Bills with 6 months for withholding assents. • Punchhi Commission- Governor should decide on the Bills within 6 months. • The Chief Minister should be consulted before appointing the Governors and State Legislatures must be empowered to impeach the Governors.

Intervention of Judiciary in Governor's Role

- **Shamsher Singh Case-** The Governor does not exercise their discretionary powers while withholding assent or returning a Bill to the State Legislature.
- **Rameshwar Prasad Case-** Governor's refusal to give assent to the bill is subjected to judicial scrutiny and can be struck down as unconstitutional.

- **Nabam Rebia case-** The discretionary powers of the Governor to withhold assent are amenable to judicial review.
- Supreme Court recently underlined that the power to take decisions affecting the governance of the State or the nation is essentially entrusted to the elected arm of the State.
- Governor, as an appointee of the President, is *just a "titular head"* of the State.

What lies ahead?

- *Federalism* is a basic feature of our Constitution and the Governor's office should not undermine the powers of elected governments at the States.
- The Supreme Court need to fix a timeline for Governors to give assents to Bills.
- Constitution may be amended to provide for consultation of the Chief Ministers before appointment of the Governors and impeachment of the Governors by the State Legislature.

1.3 Loss and Damage Fund

Why in news?

Recently, Adaptation and Loss and Damage (L&D) are in sharp focus due to intensification of climate crisis.

What is the difference between adaptation and L&D?

Adaptation	L&D
It refers to the actions taken to reduce the negative impacts of climate change	It refers to the financial support provided to the countries that suffer from the unavoidable and irreversible impacts of climate change.
It is a proactive response to cope with climate challenges	It is the irreversible consequences that cannot be avoided or mitigate.
It involves reducing emission to prevent future climate impacts	It involves investments in issues that will reduce the severity of impacts
Example- Building sea walls, planting drought-resistant crops, installing renewable energy sources.	Example- Compensation for the loss of lives, livelihoods, land or cultural heritage due to extreme weather events, sea level rise, or desertification.

To know about Loss and Damage fund, click [here](#)

Historic pollution has elevated the world's average surface temperature by more than 1 degree Celsius.

What is the genesis of L&D fund?

- **Purpose-** To provide financial and technical assistance to developing nations that suffer from L&D due to climate change.
- **COP 19-** At the COP 19 to the United Nations Framework Convention on Climate Change (UNFCCC) in Warsaw, Poland, in 2013, member countries formally agreed to establish the L&D fund.
- **COP 25-** *Santiago network for L&D* was set up, but countries didn't commit any funds.
- **COP 26-** *Glasgow dialogue* on finance for L&D was established to continue discussions over the next three years on the fund.
- **COP 27-** In 2022, representatives of UNFCCC's member states agreed to set up the *L&D fund and Transitional Committee* (TC) to figure out how new mechanisms under the funding mechanisms would operate.

What is "loss and damage"?

The phrase refers to costs already being incurred from climate-fuelled weather extremes or impacts, like rising sea levels

- Climate funding so far has focused on cutting CO2 emissions, while a third of it went towards helping communities adapt to future impacts

- Loss and damage funding is expected to cover the cost of damage that countries cannot avoid or adapt to

- A report by 55 vulnerable countries estimated that their combined climate-linked losses in the last two decades totalled



\$525 billion, or 20% of their collective GDP. This could go upto \$580 billion per year by 2030

- Vulnerable countries and campaigners argue that rich countries that caused the bulk of climate change with their historical greenhouse gas emissions should pay

What are the concerns with the L&D fund?

- **Hosting the fund-** The interest of hosting the fund at World Bank is a major issue as the bank charges an exorbitant overhead fee which dilutes the intent of L&D fund.
- **Eligibility-** The L&D fund is eligible to all developing nations as per Common But Differentiated Responsibilities (CBDR), which is a cause of concern for developed nations.

Common But Different Responsibilities (CBDR)

- CBDR was formalized in international law at the 1992 United Nations Conference on Environment and Development (**UNCED**) in Rio de Janeiro.
- This principle balances both the needs such as:
 - for all States to take responsibility for global environmental problems
 - to recognize the wide differences in levels of economic development between States
- **Voluntary support-** Developed nations like US have remained non-committal about being primary donors to the fund and have rejected references to CBDR, equity and liability in the draft.
- **Fund size-** The indication of the size of the fund was quashed and the current draft simply urges developed nations to provide money.
- **Lack of will-** The wealthy nations are not willing to fulfil the intended commitments which undermines faith in global climate negotiations and hampers the cooperative spirit to address climate change.

What are the consequences of delayed implementation of L&D fund?

- **Vulnerable communities-** Delayed implementation of the fund will impact developing nations, as they suffer from climate change.
- **Humanitarian crisis-** It will increase humanitarian crises, including food shortage, people displacement and conflict.
- It forces communities to cope independently with the worsening climate and its consequences.
- **Economic impact-** Absence of support will have economic impact for both developed and developing nations.
- Financial crises and economic downturns in one region can have extensive outcomes due to interconnectedness of global economy.
- **Biodiversity loss-** There will be limited capacity to address environmental degradation and the loss of vital ecosystems, which will further worsen the environmental crises, causing irreversible harm to the earth.
- **Security impact-** Climate change induced instability will have security implications, as conflicts and tensions in vulnerable nations threaten to spill across borders.

What lies ahead?

- A successful response to climate change requires us to balance the proactive measures of adaptation with the moral and financial responsibility of addressing the losses and damages that are inseparable of a climate-altered world.
- To achieve climate justice, rich countries must meet their obligations to deliver finance fairly, and uphold the principles of equity, justice, and solidarity in the face of a changing climate.

2. HISTORY

2.1 All about Antiquities

Why in news?

India is close to signing an agreement with the United States under which the process for the return of stolen antiquities will be hugely simplified.

What is an antiquity?

- **Antiquities and Art Treasures Act, 1972-** It defines “antiquity” as
 - Any coin, sculpture, painting, epigraph or other work of art or craftsmanship

- Any article, object or thing
 - detached from a building or cave
 - illustrative of science, art, crafts, literature, religion, customs, morals or politics in bygone ages

Antiquity criteria	Duration
Any article, object or thing of historical interest	Not less than 100 years
Manuscript, record or other document which is of scientific, historical, literary or aesthetic value	Not less than 75 years

What is the legal framework in India for antiquities?

- **Ancient Monuments Preservation Act, 1904**- It was enacted under Lord Curzon in British India to protect the ancient monuments and objects of archaeological, historical, or artistic interest.
- **Antiquities (Export Control) Act, 1947**- It is the first law that was enacted to regulate the export of antiquities from India.
- **Ancient Monuments and Archaeological Sites and Remains Act, 1958**- It was enacted to preserve ancient and historical monuments and archaeological sites and remains of national importance.
- **Antiquities and Art Treasures Act, 1972 (AATA)** - It empowers the Central Government to compulsorily acquire any antiquity or art treasure and is based on UNESCO 1970 convention.
- Every person who owns, controls or is in possession of any antiquity shall register such antiquity before the registering officer and obtain a certificate in token of such registration.

Constitutional Framework to Protect Cultural Heritage
<ul style="list-style-type: none"> • Article 51 A (f) - It states that it shall be the duty of every citizen of India to value and preserve the rich heritage of our composite culture. • Article 49- Protection of monuments and places and objects of national importance. • 7th Schedule- The cultural heritage is protected under Union List, State List and Concurrent List.

What do the international conventions say about antiquities?

- **UNESCO 1970 convention**- It is on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property.
- It stated that, "The requesting Party shall furnish, at its expense, the documentation and other evidence necessary to establish its claim for recovery and return.
- Cultural property is defined as the property designated by countries having "importance for archaeology, prehistory, history, literature, art or science."
- **UN resolutions**- UN resolution 2367 and other several resolutions condemned and prevented the illicit trafficking of cultural property, especially in conflict zones to promote peace and justice

An INTERPOL report in 2019 said that "the illicit international traffic of cultural items and related offences is sadly increasingly prolific."

Can India bring back antiquities?

- **International cooperation**- First two categories' requests have to be raised bilaterally or on international fora.
- In 2022, Maharashtra government announced that it was working to bring back the sword of Chhatrapati Shivaji Maharaj from London.
- This sword was given to Edward, the Prince of Wales (the later King Edward VII) by Shivaji IV in 1875-76.
- **Proof of ownership**- Antiquities in the second and third categories can be retrieved easily by raising an issue bilaterally with proof of ownership and with the help of the UNESCO convention.

CATEGORIES OF ANTIQUITIES	
Category-I	• Antiquities taken out of India pre-independence
Category-II	• Antiquities which were taken out since independence before the implementation of AATA
Category-III	• Antiquities taken out after the implementation of AATA

Cultural Property Agreement

- **India-US pact**- India is close to signing an agreement with the US that will simplify the process for the return of stolen antiquities.

- **Import restrictions-** It stops looted and stolen cultural property from entering the US while encouraging the legal sharing of such objects for scientific, cultural, and educational purpose.
- **Hassle free return-** The US will automatically offer to return any cultural property that is seized and forfeited under import restrictions.
- **Prevent illicit trafficking-** It will eliminate key sources of funding for terrorists and transnational organised crime.
- **Time efficient-** It will also save time and resources for India, as it will not have to prove the ownership of the objects under Archaeological Survey of India.

3. GEOGRAPHY

3.1 Suez Canal and its Alternative

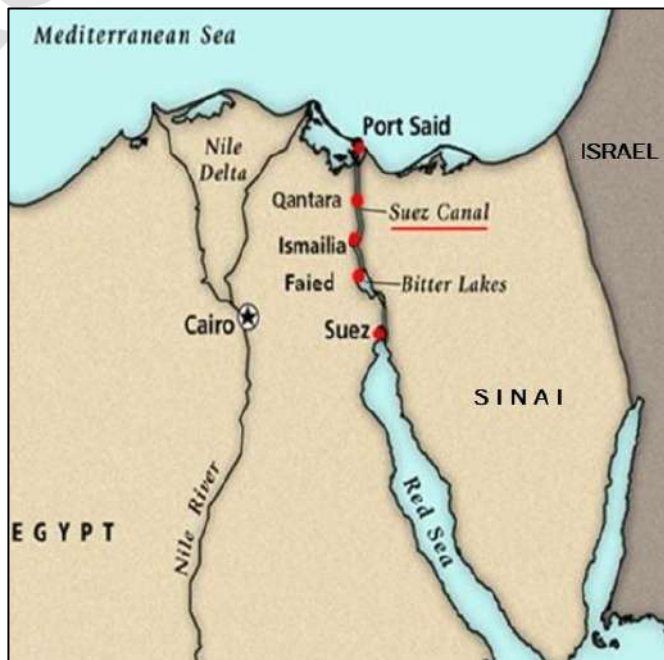
Why in news?

Israel has come up with plans to create an alternative to the Suez Canal.

To know about Israel-Palestine conflict click [here](#)

What was the historical background of Suez Canal?

- **Location-** The Suez Canal is a man-made canal that connects the Mediterranean Sea to the Red Sea, providing a crucial shortcut for shipping between Europe and Asia.
- It cuts north-south across the Isthmus of Suez in Egypt.
- **Year of construction** - Construction of the canal began in 1859 and it took around 10 years to complete it.
- **Management-** The canal is owned and maintained by the Suez Canal Authority (SCA), which is under the government of Egypt.
- **Convention of Constantinople-** Signed in 1888 by the maritime powers, it stated that the canal should be open to ships of all nations in times of both peace and war.
- Acts of hostility in the waters of the canal and the construction of fortifications on its banks were forbidden by the convention.
- The British and French owned most of the shares in the canal company and used their influence to protect their interests.
- **Suez Crisis** - In 1956, Egypt took over the Suez Canal from the British and French shareholders to fund a dam project on the Nile River.
- This nationalization triggered a military attack by UK, France and Israel on Egypt, marking the 1st deployment of the UN Peacekeeping Forces anywhere in the world.
- They were stationed in Sinai to maintain peace between Egypt and Israel after the withdrawal of the invading forces.
- **Egypt-Israel conflict-** In 1967, Egypt expelled UN peacekeepers from Sinai and fought with Israel.
- Israel captured Sinai and Egypt blocked the Suez Canal for 8 years.
- In 1975, Egypt and Israel signed an agreement to end the hostilities and reopen the canal.
- **Arab-Israeli War** - The canal was also a key battleground in the 1973 Arab-Israeli War, where Egypt and Syria attacked Israel.



What is the significance of Suez Canal?

- **Global trade-** The canal is a vital link between the West and East, carrying 10% of the global trade every year.
 - An estimated 12% of world maritime trade passes through the Suez Canal.
- **Time efficient-** The canal ensured that ships travelling between Europe and Asia would not have to travel all the way around the continent of Africa.
 - The canal cut the distance between London and Mumbai by a more than 41%.
- **Economy lifeline-** As per World Bank, the canal accounts for nearly 2% of Egypt's GDP.
- **Traffic management-** The canal handles an average of 50 ships per day, with a total value of 9.5 billion dollars.

Established in 2015, Suez Canal Economic Zone is a special economic zone located in Egypt to promote economic growth and to attract foreign investment to the country.

What are the issues with Suez Canal?

- **Shipping bottleneck-** Despite being widened and deepened over the years, the canal remains perennially congested, with long queues at either end.
- **Suez Canal blockage-** In 2021, the cargo ship "Ever Given" got stuck in the canal thereby affecting the global supply chain and oil prices.
 - It was estimated that the resulting "traffic jam" held up an estimated 9.6 billion dollars of goods every day.
- **Monopoly-** Egypt's control over the waterway has been a source of conflict for almost 70 years now.



What was the alternative proposed to Suez Canal?

- **Ben Gurion Canal Project -** Ben Gurion Canal Project is a proposal to create a canal through the Negev Desert in Israel, connecting the Gulf of Aqaba and the Eastern Mediterranean.
- Named after the Israel's founding father David Ben-Gurion, it was 1st envisioned in 1960s to create an alternative route to the Suez Canal.

Significance	Challenges
<ul style="list-style-type: none"> • Navigation- The route is easier for transportation which are unable to transit the Suez Canal due to restrictions on the ship size. • Efficient- It would provide alternative to sailing around Africa's southern tip which is more time consuming and expends more fuel. • Crisis recovery- The canal will drastically reduce the possibility of a crisis in world trade during instances like Suez Canal blockage. • Regional development- The canal would be a strategically valuable alternative to the Suez Canal and would contribute greatly to the economic development of the region. 	<ul style="list-style-type: none"> • High cost- The estimated cost of project is as high as 100 billion dollars. • Security issues- The plan to use nuclear explosives to dig the canal through the Negev Desert makes this extremely risky. • Military threat- The canal which will potentially transport billions of dollars' worth of freight daily cannot run in land under constant military threat, from Hamas rockets or Israeli attacks. • Logistical constraints- The Canal would have to overcome the challenges of the terrain and topography, such as the Dead Sea basin, which is below sea level, and the Negev Mountain Range, which would require a lot of excavation.

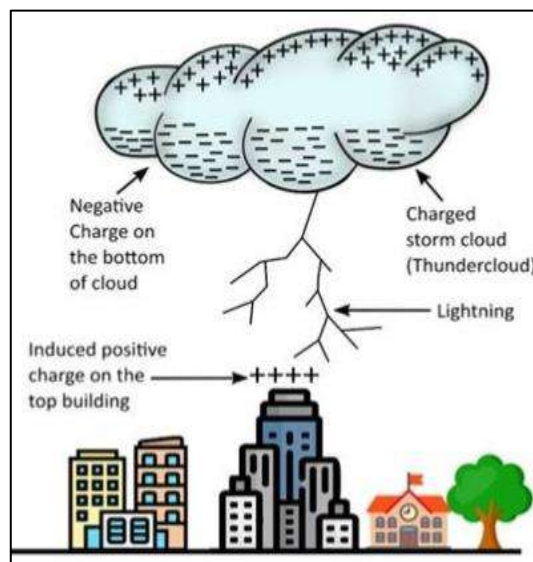
3.2 All About Lightning

Why in news?

Unseasonal and sudden heavy rainfall, accompanied by thunderstorms, hailstorms and lightning strikes, have claimed 27 lives in Gujarat.

What is lightning?

- It is a natural phenomenon where the electric charges travel from one point to the other within the clouds or between a cloud and the earth.
- It is accompanied by a bright flash and sometimes thunderstorms.
 - Inter cloud or intra cloud lightning**- They are visible and are harmless.
 - Cloud to ground lightning**- It is harmful as the 'high electric voltage and electric current' leads to electrocution.
- When the temperature drops, the water droplets that are held in the clouds begin to become ice crystals.
- These ice crystals will rub against one another, creating a static charge in the clouds.



Lighter positive charge	Migrate towards the higher end of the cloud
Heavier negative charge	Move towards the lower end of the cloud
Big positive charged surface	Earth's surface

- Electrostatic discharge**- The positive and negative charges (opposite charges) attract one another. However, there will be air between the ground and the cloud.
- Because air is a poor conductor, it opposes the passage of charge.
- Beyond a certain point, the charge build-up gets tremendously massive and the discharge happens in a split second. This is known as an electric discharge.
- This massive charge flow generates heat and light.

Causes of Lightning in Gujarat

- Weather system**- India Meteorological Department (IMD) has attributed the lightning flashes to 3 weather systems namely
 - Cyclonic circulation
 - Western Disturbances
 - Easterly trough
- Cyclonic circulation**- It is over Northern Arabian Sea and adjoining Saurashtra and Kutch, which is a low-pressure area that draws moist air from surroundings.
- Western disturbances**- They are storms that originate over the Mediterranean Sea region and may bring rainfall to North-Western India in the winter.
- They were stronger this time and descended to lower latitudes, affecting Gujarat and Madhya Pradesh.
- Easterly trough**- It is a zone of low pressure in the easterly winds that flow from the east in the equatorial region throughout the year.
- Active ITCZ**- Intertropical Convergence Zone (ITCZ, located slightly north of the Equator) is very active which may have provided sufficient moisture to the area, resulting in thunderstorm.

What are the impacts of lightning?

- Loss of life**- It is one of the leading causes of weather-related deaths in India.
 - As per National Crime Records Bureau, 2,876 people died due to lightning strikes in 2019.
- Health effects**- It can cause burns, wounds, tissue damage, scarring, cataracts, hearing loss, broken bones, and muscle pains.
- It can affect the brain and nervous system, leading to brain damage, memory loss, coma, stroke and seizures.

- It can cause heart disorder which may lead to respiratory arrest.
- **Psychological effects**- It can cause behavioural changes, emotional distress, anxiety, depression, post-traumatic stress disorder, and phobias.
- **Environmental impacts**- Lightning can cause fires, power outages, damage to buildings and structures, and ozone depletion.
- **Loss of biodiversity**- It can cause forest fires, which can destroy the habitats and food sources of many animals.
- **Positive impact**- It can also produce nitrogen oxides that fertilize the soil and oceans and trigger chemical reactions that create ozone.

Steps taken to prevent Lightning

- **Lightning alert system**- The IMD has developed a lightning alert system that uses satellite and radar data to generate lightning potential maps and issue warnings to the public through SMS, mobile apps, and social media.
- **Lightning safety awareness**- The NDMA has launched a campaign to raise awareness about lightning safety among the people.
- **30-30 rule**- It advises people to take shelter if they hear thunder within 30 seconds of seeing lightning.
- **Lightning protection devices**- The government has also encouraged the installation of lightning protection devices, such as lightning arresters, surge protectors, and earthing systems in buildings and structures.
- **Forest fire management**- The government has taken steps including monitoring, early warning, fire prevention, fire suppression, and post-fire rehabilitation to prevent and control forest fires triggered by lightning.

4. SOCIAL ISSUES

4.1 All about Central Adoption Resource Authority (CARA)

Why in news?

The Supreme Court has expressed concern over the delay in India's system of child adoption.

What is Central Adoption Resource Authority (CARA)?

- **Statutory body**- CARA is enacted under *Juvenile Justice (Care and Protection of Children) Act, 2015*.
- **Launched**- 1990
- **Aim**- To oversee child adoption procedures, in the best interest of the child, for Indians and non-resident Indians living abroad.
- **Mandate**- To monitor and regulate in-country and inter-country adoptions.
- To deal with inter-country adoptions in accordance with the provisions of the *Hague Convention, 1993*.
- **Nodal agency**- Ministry of Women & Child Development.

What are the functions of CARA?

- **Adoption**
 - To promote in-country adoptions
 - To facilitate inter-state adoptions in coordination with State Agency
 - To regulate inter-country adoptions
- **Regulations**- To frame regulations on adoption and related matters from time to time as may be necessary

CARA became a signatory to the Hague Convention on Protection of Children and Co-operation of 1993 and India ratified the convention in 2003.

- **Monitor**- It regulates bodies like
 - State Adoption Resource Agency (SARA)
 - Specialised Adoption Agency (SAA)
 - Authorised Foreign Adoption Agency (AFAA)
 - Child Welfare Committees (CWCs) and
 - District Child Protective Units (DPU)

Procedure for Adoption

- **Adoption** – It means a legal process that allows someone to become the parent of a child, even though the parent and child are not related by blood.
- But in every other way, adoptive parents are the child's parents.
- **Legal framework for adoption in India** – It includes
 - Hindu Adoption and Maintenance Act, 1956 (for Hindus, Jains, Sikhs and Buddhists) and
 - [The Juvenile Justice \(Care and Protection of Children\) Act, 2015](#)
- **Procedure** - A database of children and registration of prospective parents is done on a centralised **Child Adoption Resource Information and Guidance System (CARINGS)**, which is maintained by CARA.
- Parents register themselves on CARINGS.
- **Specialised Adoption Agency (SAA)**, the first point of government contact for a child, conducts a Home Study Report and completes the referral and adoption process.
- Parents can then take in the child for pre-adoption foster care. SAA is required to file a petition in the court.
- CARA conducts *post-adoption follow-up* for a period of **2 years**.
- **Child Welfare Committees** play a vital role of declaring a child legally free for adoption thereby releasing the child for adoption placement.

WHO CAN ADOPT

Prospective adoptive parents (PAPs) who are physically, mentally and emotionally stable, financially capable and who do not have any life-threatening medical conditions

They should not have been accused or convicted in criminal act of any nature

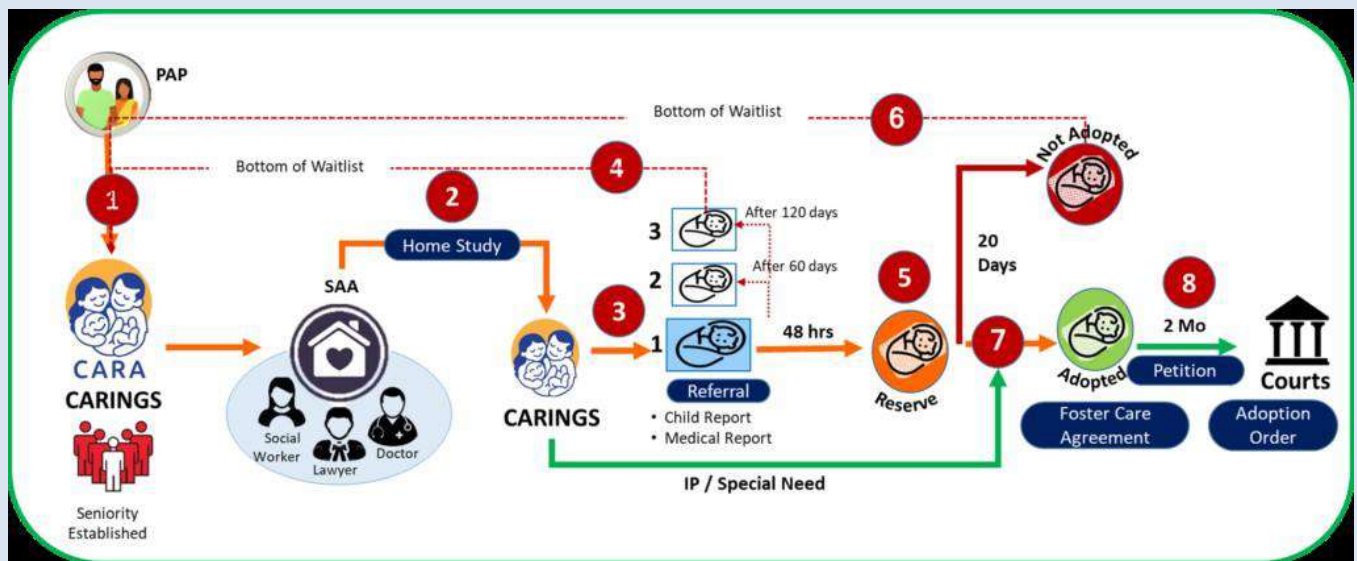
Any PAP, irrespective of their marital status and whether or not they have biological son or daughter, can adopt a child

The consent of both spouses will be required in case of a married couple

A single female can adopt a child of any gender

A single male will not be eligible to adopt a girl child

[Click here](#) to know more about procedure for adoption



What reforms were undertaken by CARA?

- **SC's move**- In 2011, Supreme Court criticised CARA for its inefficiency and for not maintenance of records.

- **Amendment-** In 2015, the *Juvenile Justice Act* was amended to overhaul the adoption system and curb malpractices.
- CARA was empowered to streamline the process and to introduce transparency in the regulation body.
- CARINGS enabled direct adoption by children institutions and civil society organisations with a no-objection certificate.
- Eligibility was expanded for adoption to *include individuals in a live-in relationship*.
- **Decentralisation-** In 2022, the *Juvenile Justice Act* was further amended to decentralise the adoption process and give more authority to local District Magistrates to issue adoption orders and inspect childcare institutions.

What are the challenges with CARA?

- **Delayed adoption-** To adopt a child, India's almost 30,000 prospective parents wait for an average of 3 years.
- **Decline in adoption-** Despite the legal and procedural changes, the adoption figures have dropped almost 50% from 2010 to 2021.
- **Complexity-** 2022 amendment in *Juvenile Justice Act* fostered decentralisation in amendment process but also created confusion and delays in adoption by parents.
- **Lack of awareness-** Most District Magistrates (DMs) were not aware of the revised changes, and the transfer of cases from courts to DMs would further extend timelines.
- **Lack of registration-** Many children in need of adoption are not registered by SAA and CWCs due to poor functioning and administrative hiccups.
- **Shortage of licensed agencies-** A child can be registered on CARA only through a licensed agency, but children find themselves in a loop of transfers and delays due to missing localised adoption channels.
- **Procedural flaw-** CARA faced difficulties in issuing no-objection certificate for inter-country adoptions and ensuring post-adoption follow-ups.
- **Parent-centric-** CARA process become tedious as it focuses on parents neglecting the best interest of child.
- **Informal placements-** Many children are placed directly with the families by hospitals without following legal procedures making them vulnerable to the risks of trafficking, exploitation and abuse.

What lies ahead?

- The need of the hour is to follow the advice of the Parliament Committee to find and adopt the children who beg on the streets as soon as possible.
- CARA should be governed by a "*child-centric, optional, enabling and gender-just*" special adoption law.

4.2 Inclusion of Transgenders in Armed Forces

Why in news?

The Transgender Persons (Protection of Rights) Act, 2019 and its implications are being examined by the Indian Armed Forces in order to determine potential employment opportunities for transgenders.

Transgender Persons (Protection of Rights) Act, 2019	
Legal recognition	It recognizes transgender individuals as a <i>third gender</i> and recognizes their right to <i>self-identification</i> based on their gender identity.
Social justice	It prohibits discrimination against transgenders in education, employment, healthcare, and access to public spaces.
Institutional support	It mandates the creation of welfare boards at the <i>State levels</i> , which will be responsible for facilitating access to social welfare schemes for transgender persons.
Certificate of identity	Transgenders can obtain a certificate of identity, which will enable them to access various services and entitlements as per their self-identified gender.
Health care	It provides for the establishment of separate hospitals and clinics to provide healthcare services to transgenders.

Criminal offence	It criminalizes offences against transgenders including physical, sexual, emotional, and economic abuse.
Penalty	It provides for the punishment of those who force transgenders into begging or those who deny them access to public places such as parks, hospitals or restaurants.

What about the joint study group formed regarding this aspect?

- **Study group-** It was constituted by the Principal Personnel Officers Committee (PPOC).
 - PPOC comprises *top officers of the 3 services* (Army, Navy and Air Force)
- **Head-** Directorate General of Armed Forces Medical Services, the tri-service medical organisation of Armed Forces.
- **Aim-** To deliberate on the implications of the Transgender Persons (Protection of Rights) Act, 2019 and suggest a way forward for its implementation in the defence forces.

The Armed Forces, at present, don't recruit transgenders or people identifying as homosexuals.

Why there is a need to include transgenders in armed forces?

- **Social inclusion-** This is a positive step as trans community has faced societal discrimination and marginalisation in many ways, including access to social equality, social rights, education, and employment opportunities.
- **Breaks the stigma-** Excluding transgender people from military service reinforces social stigma and inequality.
- **Employment opportunity-** As per National Human Rights Commission study in 2018, it was found that 96% of transgender individuals face employment discrimination, resulting in their limited access to decent career opportunities.
- **Limited accessibility-** The 1st ever study on the rights of transgenders unveiled that around 92% of transgender individuals lack access to engage in economic activities within the nation, with even qualified individuals being denied employment opportunities.
- **Lessons to India-** A study on the impact of allowing transgender people to serve openly in US military suggests that embracing diversity can enhance the effectiveness and viability of the armed forces.
- **Legal framework-** Transgender Persons (Protection of Rights) Act 2019 stipulates that both government and private entities are prohibited from engaging in discriminatory practices against transgender individuals in areas pertaining to employment, such as recruiting and promotion.
- **Duty-** All citizens have a duty to serve their country, hence transgenders have the right to perform duty to serve their country.
- **Transgender suitability-** There is no factual evidence to support the claim that transgender people are unfit for military service.

- **Transgenders in Mughal era-** They had high positions and respect and served as harem guards and royal aides.
- **Transgenders in British era-** The British colonisers disliked and misunderstood transgender people and designated them as a "*criminal tribe*" and withheld the civil rights.

What are the challenges in including them in armed forces?

- **Distinct recruitment-** Central Armed Police Forces (CAPF), as well as the army and police forces, employ a distinct psychological approach to administration.
- Recruitment of transgenders in the CAPF may encounter challenges due to practical considerations related to unconventional command philosophy.
- **Training prerequisite-** Following a period of familiarisation and pre-induction training alongside soldiers will be challenging for transgenders.
- **Conservative outlook-** Indian Army as an institution has not undergone significant modernization with respect to [LGBTQ](#) communities.
- **Differential rights-** Supreme Court ruling in 2014 and 2018 with respect to transgender person may not be applicable to Indian Army as certain rights afforded to civilians may not extend to members of the armed forces.

- **Article 33-** Fundamental rights of armed forces personnel may be subject to limitations as determined by legislation enacted by the Parliament.
- This implies that the Army Act, Navy Act, and Air Force Act have the capacity to curtail various liberties that are typically afforded to non-military individuals.
- **Administrative constraints-** Indian Army may face difficulties such as housing and other infrastructure of transgender people.

Steps taken regarding Inclusion of Transgenders

- **Gender identity-** In 2014, Supreme Court in the National Legal Services Authority ([NALSA case](#)) acknowledged transgenders as third gender within the framework of Indian Constitution.
- **Yogyakarta Principles-** Quoted in 2014 Supreme Court ruling, it provides a comprehensive framework for understanding and promoting human rights in relation to gender.
- **Struck Section 377 of IPC-** In 2018, Supreme Court rendered [Section 377](#) of Indian Penal Code as null and void, therefore eliminating the criminalization of homosexuality.
- **Progressive approach-** Kerala High Court upheld the rights of transgender persons to self-determination and non-discrimination, and directed the army to amend the National Cadet Corps Act, (NCCA) 1948 to include transgender persons within 6 months in NCC.

5. INDIAN POLITY

5.1 Subcategorisation of OBCs

Why in news?

Recently, the Minister for Backward Classes Welfare in Andhra Pradesh said that the state will begin a backward classes census.

Who are the Other Backward Classes (OBCs)?

- **OBC-** The expression 'OBC' was coined to denote backward/ marginalised communities and castes that were not Scheduled Castes (SCs) or Scheduled Tribes (STs).
- It is recognised that social backwardness in India has traditionally been a direct consequence of caste status, and that other types of backwardness have flowed from this initial handicap.
- **Reservation-** The affirmative action for OBCs is mandated by **Article 15(4)** of the Constitution-

"Nothing in this article or in clause (2) of Article 29 [non-discrimination with regard to admission into state educational institutions on grounds of religion, caste, etc] shall prevent the State from making any special provision for the advancement of any socially and educationally backward classes of citizens"

- **Article 16(4)-** It allows the State to make provision for the reservation of appointments or posts in favour of any backward class of citizens which is not adequately represented in the services under the State.
- **Categorisation-** OBCs have been generally identified on the basis of their occupation like cultivation of own land, tenant farming, agriculture labour etc.,
- Two broad categories within the OBCs emerge,
 - Those who own land – Eg: Yadavs and Kurmis in Bihar and Uttar Pradesh
 - Those who do not own land

What is sub-categorisation of OBCs?

- It refers to creating subgroups of backward castes within the OBC category.
- **Need for sub-categorisation** - OBCs get 27% reservation in central government jobs and admission to educational institutions.

Article 340 provides for the appointment of a Commission to investigate the conditions for the improvement of socially and educationally backward class

- There are more than 2,600 entries in the Central List of OBCs, but over the years, a perception has taken root that only a few affluent communities among them have benefited from the quota.
- Therefore, there is an argument that a “sub-categorisation” of OBCs is needed in order to ensure “*equitable distribution*” of the benefits of reservation.
- **Sub-categorization of OBCs in States** – It has been done in States such as Karnataka, Uttar Pradesh, Bihar, etc.
- **Sub-categorization of OBCs in Central List** – In 2017, Justice Rohini Panel was appointed to examine the sub-categorisation of OBCs.

	About the Commission
Year	2017 under Article 340 of the Constitution
Chairman	Justice G.Rohini
Terms of reference	<ul style="list-style-type: none"> • To examine the inequitable distribution of reservation benefits among OBCs in the Central List • To work out the mechanism, criteria, norms and parameters in a scientific approach • To identify the respective castes and classify them into their respective sub-categories
Recommendations	<p>It suggested breaking the caste groups into broad categories,</p> <ul style="list-style-type: none"> • With the dominant castes getting the smallest share of the 27% reservation • The historically crowded-out caste groups getting the largest share of the reservation pie

What committees were formed regarding OBCs?

1 st OBC Commission	About
Head	Kaka Kalelkar
Year	1953
Objective	To identify socially and educationally backward classes
Recommendation	<ul style="list-style-type: none"> • It prepared a list of 2,399 backward castes or communities in the country, categorised 837 of them as “most backward”. • It recommended <ul style="list-style-type: none"> ○ Enumerating castes in the 1961 census ○ Providing 25-40% reservation at different levels of government jobs ○ 70% reservation for admission to technical and professional institutions
Outcome	The report was never discussed in the Parliament and never implemented as the government decided that any all-India list drawn up the Central Government would have no practical utility
2 nd OBC Commission	About
Head	B.P.Mandal
Year	1979
Recommendations	<ul style="list-style-type: none"> • Identified 3,743 castes and communities as OBCs • Estimated their population at 52%

	<ul style="list-style-type: none"> Recommended 27% reservation in government jobs and admissions to all government-run scientific, technical, and professional institutions
Outcome	Within the 27% reserved for Socially and Economically Backward Castes, preference shall be given to candidates belonging to the poorer sections of the SEBCs

5.2 Maratha Quota Demand

Why in news?

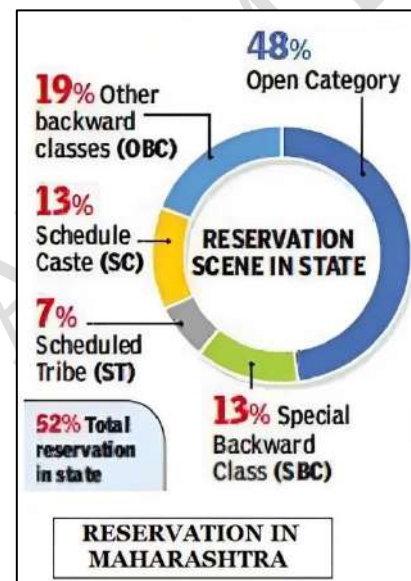
Recently, an activist Manoj Jarange Patil has been demanding a blanket reservation in education and government jobs for all Marathas in the State.

Who are Marathas?

- The Marathas comprise mainly peasant and landowning groups who make up almost a *third of the population of Maharashtra*.
- Most Marathas speak Marathi, though not all Marathi-speaking people are Marathas.
- The Marathas have been the *politically dominant community* in Maharashtra, 12 of its 20 Chief Ministers have been Marathas.
- The division of holdings and problems in the farm sector over the years have led to a decline in the prosperity of middle- and lower middle-class Marathas.

What is the issue with demand of Maratha quota?

- Reservation demand-** Marathas have been demanding reservation in jobs and education under OBC category for decades.
- Legal challenges-** [Supreme Court struck down](#) the State's *Socially and Economically Backward Classes Act 2018* which granted 16% quota to the Marathas.
- State's response-** Maharashtra government has filed a curative petition and plans to conduct a backwardness survey of the community.
- Issue -** Marathas want to be identified as Kunbis a sub caste that already gets OBC reservation.
- Justice Sandeep Shinde Committee** was appointed to decide the procedure for granting Kunbi caste certificates to Marathas.
- The government has also accepted the first report of the committee and issued a Government Resolution.
- Counter-protests-** The OBC community and the Dhargar community have opposed the Maratha quota demand and threatened to launch their own agitations.



How the Maratha reservation law evolved?

Committee	Opinion on Reservation for Maratha
Kaka Kalelkar commission, 1955	<ul style="list-style-type: none"> Apart from Brahman, the Maratha claimed to have dominated all other communities in Maharashtra. Hence the commission did not recognise Maratha as a backward class community in the state of Bombay.
B.D.Deshmukh Committee, 1964	<ul style="list-style-type: none"> The committee did not find Maratha as backward class.
Mandal Commission, 1979	<ul style="list-style-type: none"> National Commission for Backward Classes held that Marathas are not a socially and educationally backward class community, but rather a socially advanced and prestigious community.

Rane Commission, 2014	<ul style="list-style-type: none"> It recommended a special reservation for the Maratha caste under Articles 15(4) and 16(4) of the Indian Constitution.
Justice M.G. Gaikwad Commission, 2017	<ul style="list-style-type: none"> It recommended Maratha people to be designated as a Social and Economic Backward Class (SEBC) of citizens with insufficient representation in services. Based on the report, Maharashtra SEBC Act was enacted in 2018.

Why Supreme Court struck down the SEBC Act 2018?

- Unconstitutional-** The Act exceeds the 50% ceiling limit imposed on reservations in ***Indra Sawhney v. Union of India***.
- Lacks data-** The Act provides reservation on the basis of the ***Justice Gaikwad Commission report***, which lacks reliable, scientific, and adequate data to justify either the backwardness of Marathas or the extraordinary condition of increasing reservations in Maharashtra from 52% to 68%.
- Violates fundamental rights-** The Act establishes a separate reservation category for Marathas outside the OBC category, ***infringing on Articles 14, 16, and 19*** of the Constitution by bestowing special benefits on them.
- Violates 102nd Constitution (Amendment) Act-** The Act was passed without adhering to the procedures outlined in this Act.
 - President* alone is empowered to identify SEBCs and include them in a list to be published under **Article 342A (1)**.
 - The *States can only make suggestions* to the President of the Commission under **Article 338B** (National Commission for Backward Commission).

5.3 Concerns over Information Commission

Why in news?

Supreme Court has cautioned the government that the Right to Information (RTI) Act, 2005 would be reduced to a dead letter if Information Commissions are not staffed.

What is RTI Act, 2005 about?

RTI Act 2005	
<ul style="list-style-type: none"> Section 2(j) of the RTI Act defines “right to information,” as the right to information accessible under this Act which is held by or under the control of any public authority. Fundamental right- RTI is a part of the fundamental right of <ul style="list-style-type: none"> Article 19(1)- Freedom of speech and expression Article 21- Right to life and Personal liberty Nodal agency- Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions Objective- <ul style="list-style-type: none"> To provide for a practical framework that allows citizens to access information under public authorities To promote transparency and accountability in the working of governments and their instrumentalities To develop an informed citizenry and to contain corruption To lay down exemptions to disclosure of information when such disclosure is likely to conflict with other public interests Information Commissions- It is constituted as the supreme authority and the highest decision-making body under the Act. 	
Hierarchy	Institution
Central level	Central Information Commission (CIC)
State level	State Information Commission (SIC)

- **RTI Amendment Act 2019**- It gave Central government, the power to decide the tenure and salary of commissioners.
- **Digital Act 2023**- It modified RTI Act by creating an exemption for all personal information from disclosure.

What is the significance of RTI Act 2005?

- **Informed citizenry**- The right of a citizen to question the government on its various policies and measures forms the very essence of a democracy.
- **Accountability**- Having access to the information regarding the affairs of the government will hold the government accountable for its actions.
- **Good governance**- RTI is an index to measure the growth and development of a country, it will empower citizens and expose corruptions.
- **Public participation**- Information regarding the government affairs ensures the active participation of a citizen in the working of the democracy at all times.
- **Transparency**- The act creates a culture of openness that fosters public trust and confidence.
- **Fundamental right**- Supreme Court also held that the right of the citizens to know, and to receive information regarding matters of public concern is a fundamental right flowing from Article 19(1)(a).

To know about the concerns of RTI Act, click [here](#)

What about Information Commissions?

About	CIC	SIC
Constituted by	Central Government	State Government
Composition	Consists of a Chief Information Commissioner and not more than 10 Information Commissioners	Consists of a State Chief Information Commissioner and not more than 10 State Information Commissioners
Appointment	<u>President</u> on the recommendation of select committee	<u>Governor</u> on the recommendation of select committee
Select Committee	Prime Minister, Leader of Opposition in the Lok Sabha, Union Cabinet Minister nominated by the Prime Minister	Chief Minister, Leader of Opposition in the Legislative Assembly, State Cabinet Minister nominated by the Chief Minister
Tenure of the members	As prescribed by the Central Government or until they attain the age of 65 years, whichever is earlier	
Salary, allowances, other service conditions	As per the RTI Amendment Act 2019, it shall be as prescribed by the Central Government	

What are the concerns in the Information Commission?

- **Understaffed**- The appellate bodies for RTI requests are functioning without a Chief Commissioner or with insufficient staff.
- **Huge pendency**- As of 2022, around 3, 15,000 complaints are pending under RTI Act in India.
- **Ban on personal information**- Pendency and understaffed commissions would hamper the accountability of public officials and the access to social welfare schemes.
- **Dependency**- The power of the Union government to decide the tenure and salary of commissioners, affect their independence.
- **Lack of political will**- Political unwillingness in appointing the Information Commission authorities lead to the poor implementation of RTI Act 2005.

5.4 Comptroller and Auditor General of India (CAG)

Why in news?

The Comptroller and Auditor General of India (CAG) is one of the most important institutions of the country to ensure public accountability of the executive.

What is Comptroller and Auditor General?

Feature	Description
Constitutional body	Article 148 provides for an independent office of the CAG.
Financial administration	<ul style="list-style-type: none"> CAG is the head of <i>Indian Audit and Accounts Department</i> He/She is the <i>guardian of the public purse</i> and controls the entire financial system of the country at the Centre and the State level.
Appointment	<i>President</i> by a warrant under his hand and seal
Core Values	<ul style="list-style-type: none"> Institutional values- Maintaining professional standards, objective and balanced approach, independence and transparency. People values- Ethical behaviour, integrity, professional competence, fairness and social awareness
Tenure	6 years or up to age of 65 years whichever is earlier
Resignation	CAG can resign any time from his office by addressing the resignation letter to President
Removal	<ul style="list-style-type: none"> Same manner as <i>a judge of Supreme Court</i> Can be removed by the <i>President</i> on the basis of a resolution passed to that effect by both the Houses of Parliament with <i>special majority</i>. Reason for removal - Proved misbehaviour or incapacity
Reappointment	Not eligible for further office, either under the Government of India or of any State
Salary & service conditions	<ul style="list-style-type: none"> Determined by Parliament. Salary is equal to judge of Supreme Court.
Administrative expenses	<i>Charged upon Consolidated Fund of India (CFI)</i>
Success stories	<ul style="list-style-type: none"> 2G spectrum scandal Commonwealth games corruption scandal Coal mine allocation scam etc.,

What are the challenges with CAG?

- Centrally sponsored schemes**- It accounts for more than 1/10th of budget but most of them have not been audited by the CAG beyond 2018.
- MGNREGA** - In 2013, CAG found that the scheme have neither alleviated rural poverty nor created any durable assets but it has been left out of audit for over a decade.
- Political interference**- Established convention is that CAG does not take part in public debates on contents of his reports, they are self-explanatory and compete with all evidences.
- But recently Union ministry has contradicted CAG's observations on government accounts and gave point wise replies to each observation.
- Lack of transparency**- There is no proper selection criteria with respect to CAG appointment.

- The involvement of executive in the CAG's appointment is hugely problematic as he/she is supposed to audit the executive.
- **Overburdened**- It is very impractical for one individual to handle the audit mechanism of both the State and Central government as well as Public Service Units.
- **Mismanagement**- The office is allegedly holding up or delaying completed reports, alteration of approved audit plans, suspending filed audits midway which is done only in unusual situations like the pandemic.
- **Poor administration**- Transferring officers who have reportedly been involved in auditing sensitive government schemes impedes the public trust and confidence of the office.
- **Decline in reports**- The number of reports submitted by the CAG to Parliament has steeply declined over the years, thus questioning the political neutrality of the office.

CAG, Supreme Court, Election Commission and Union Public Service Commission were referred as the bulwarks of democratic system of government

What lies ahead?

- There should be a separate State auditor for each and every state and also specialized agencies which would maintain their accounts.
- As recommended by **Murali Manohar Joshi Committee**, a separate panel must be established to appoint the CAG.
- To obtain greater transparency, the suggestions of **Shungulu Panel** can be incorporated by advocating structural changes in CAG by making it a three-member body.

5.5 Centre-State Disputes

Why in news?

In recent years, the economic conflicts between Centre and States in India have increased and become a source of 'persistent frictions' in the federal system.

Why there is economic conflict between Centre and State?

- **Economic reforms**- New Economic Policy, 1991 changed the context of Centre-State relations from cooperative to a conflictual one.
- **Mobilisation of resources**- States have less autonomy over their public expenditure policies and more disputes arouse over resource sharing with the Centre.
- **Policy resistance**- States have resisted the Centre's policies leading to breakdown of the give and take equation that used to govern the Centre-State relations.
 - Example- **Tamil Nadu oppose Centre's NEET** (National Eligibility and Entrance Test) for admission to undergraduate medical courses.
- **One size fits all approach**- Homogenisation of social sector policies may not address the specific challenges faced by each State.
- **Hinders fiscal federalism**- **16th Finance Commission** has recommended 45% weightage criteria to income which is not welcomed by rich States.
- **Limited autonomy**- States should ideally have more discretion and autonomy in regulatory institutions and central agencies, but the Centre has tried to impose its own preferences and agendas on them.
- **Impact on fiscal autonomy**- Both have adopted a more rigid and confrontational stance, reducing the scope for negotiation and compromise.

Cooperative federalism is a concept that emphasise the need for coordination, collaboration and consensus among different levels of government in federal system.

What are the economic consequences due to conflict?

Underinvestment by States	Parallel Policies
<ul style="list-style-type: none"> • The spread of Centre's activities leads to a situation where the Centre starts crowding out the States in terms of investments. 	<ul style="list-style-type: none"> • Federal conflicts leads to either the Centre or States duplicating others' policies.

<ul style="list-style-type: none"> • Infrastructure development- In PM Gati Sakti, the flexibility of States in formulating their master plan is curtailed by centralised planning and implementation leading to underinvestment by States. • States disparity- The spending for the infrastructure scheme is more concentrated in the 3 largest States of Uttar Pradesh, Maharashtra and Gujarat. 	<ul style="list-style-type: none"> • Pension reforms- Many States joined the National Pension Scheme initially but some States started to roll back to old pension scheme as the fiscal cost would be visible only after 2034 when most of the newly joined employees retire. • Trust deficit- The emergence of such parallel schemes is mainly due to trust deficit prevailing in the federal system, whose fiscal costs will have long run consequences on the economy.
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Fiscal competition

- **Competition** - It is due to frictions with the Centre, State governments will engage in competition with other States and with the Centre.
- **Welfare provisioning-** The Centre has upper hand over States revenues as raising non-taxes are confined to smaller sphere.
- This is due to direct provisioning of many utilities and services by the Centre.

What lies ahead?

- The inter-dependence between Centre and States must be preserved for successful implementation of laws and policies.
- The Centre should respect the State's autonomy and discretion in various spheres.

5.6 Haryana Job Quota

Why in news?

Recently, Punjab and Haryana High Court quashed a law passed by the Haryana government in 2020 that provided 75% reservation in private jobs to residents of the State.

What is the Haryana State Employment of Local Candidates Act about?

- **Reservation-** The Act requires **private sector** employers to reserve **75% of jobs** that offer a monthly salary of **less than Rs. 30,000** for individuals who are domiciled in Haryana.
- **Eligibility-** The Act applies to all private companies, societies, partnership firms, trusts and any person employing 10 or more persons in Haryana or any other entity as may be notified by the Government.
- **Tenure-** The Act will only have effect for **10 years** from the date of its commencement.
- **Exemptions-** An employer may seek an exemption by applying to the Designated Officer under the Act, if adequate number of local candidates of the desired skill, qualification or proficiency are not available.
- The Government may also exempt certain industries and has so far exempted new start-ups and Information Technology Enabled Services (ITES) companies, short-term employment, farm labour, domestic work, and promotions and transfers within the State.
- **Registration** - Employers are required to register employees receiving gross monthly salary or wages of less than Rs. 30,000 in the Haryana Udyam Memorandum portal within 3 months of the commencement of the Act.
- **Reporting obligation-** Employers are also required to furnish a quarterly report of local candidates hired and employed during that quarter.
- **Penalty** - An employer who fails to comply with the Act is punishable upon conviction to a fine.

States with Similar Legislation

- **Maharashtra- Socially and Economically Backward Classes Act 2018** granted 16% quota to the [Marathas](#), but it was struck by the Supreme Court.
- **Karnataka-** It proposed a 70% reservation for the Kannadigas (people who can speak Kannada) in the private sector but the proposal faced opposition from the industry and legal hurdles.
- **Andhra Pradesh-** It passed a law in 2019 to provide a **75% reservation** for people who have lived in the State for at least 10 years in the private sector but it was challenged in the High Court.
- **Madhya Pradesh-** The State announced a 70% reservation for the locals in the private sector in 2019, but the notification was not issued by the State.

Why High Court quashed Haryana's private quota?

- **Unconstitutional**- The Act infringes and violates *Part III (Fundamental Rights)* of the Constitution.
- Such acts could lead to other States coming up with similar enactments, putting up “artificial walls” throughout India affecting the **Article 14** (right to equality).
- The court said the State could not invoke **Article 16** (allows the State to make reservations for backward classes in public employment) to justify reservations in the private sector, as it was not a matter of State policy or public interest.
- The State's action of reserving jobs for locals impaired **Article 19(1) (g)** (right to freedom of profession, occupation, trade or business to all citizens) and imposed unreasonable restrictions on private employers.
- **Discriminatory**- The law separated people based on their State of residence, and conflicted with the notion of having single citizenship.
- **Protectionism**- It restricts the movement of workers from one State to another by reserving jobs for locals by creating inefficiencies, inequalities, and wastage of human resources.
- **Inspector Raj**- Requiring employers to submit quarterly reports and documents to prove that they were hiring local candidates leads to excess interference by the government in private affairs.
- **Denial of legal remedy**- It barred any legal action against the officers who were enforcing the law, even if they acted in “good faith”.
- The court said this tied the employer's hands and violated their right to seek judicial remedy.

What lies ahead?

- Protectionism can have negative effects on labour productivity, output, employment, etc., and will exploit the already vulnerable migrant workers.
- States should ensure that migrant workers have the same labour rights as local workers, which would create a fair and competitive labour market.
- Labour rights such as freedom of association, collective bargaining, non-discrimination, fair remuneration, and safe and healthy working conditions should be protected at any cost.

5.7 Fiscal Prudence

Why in news?

A close look at the government's accounts highlights that fiscal deficit is owing to low revenues and not high spending.

What is the need for fiscal prudence?

- **Stable fiscal policy**- It helps to maintain fiscal sustainability and macroeconomic stability as well as promotes economic growth and social welfare.
- **Safety net**- It can help avoid fiscal crises, reduce public debt and improve the quality of public spending.
- **Effective resource mobilization**- The government should not spend more than it earns, and should use its resources efficiently and effectively to promote the economic and social well-being of its citizens.

Key terms

Fiscal prudence

- It means managing government finances in a responsible and sensible way to ensure the nation's sustainable growth, stability, and welfare.
- Indicators- Fiscal Deficit, Debt-GDP ratio and quality of expenditure.

Fiscal Deficit

- It occurs when a government spends more than it earns in a given fiscal year.
- Fiscal deficit = Total Expenditure - Total Revenue (Excluding the borrowings).

Debt-GDP ratio

- It is the ratio of the government's outstanding debt to its gross domestic product which measures the size of the economy.

Tax buoyancy

- It measures the responsiveness of tax mobilisation to economic growth.
- A tax is said to be buoyant if the tax revenues increase more than proportionately in response to a rise in national income or output.

- **Future recovery plan**- The government should also plan for the future and be prepared for any shocks or uncertainties that may affect its fiscal position.
- **Long term goals**- It involves making sound decisions regarding revenue generation, expenditure allocation and debt management.
- **Realistic strategy**- The government should have a clear strategy for raising revenues such as taxes, fees or grants and for allocating expenditures such as public goods, services or transfers according to its priorities and needs.
- **Balanced fiscal deficit**- It will indicate that the government is living within its means and not relying too much on borrowing.
- **Low debt-GDP ratio**- It indicates that the government's debt is manageable and not crowding out private investments or consumption.
- **Quality of expenditure**- A high quality indicates that the government is getting value for money and delivering results for its citizens.

India achieved fiscal prudence by enacting the Fiscal Responsibility and Budget Management (FRBM) Act in 2003, which set targets for reducing its fiscal deficit and debt-GDP ratio.

What is the picture of Indian economy with respect to fiscal prudence?

- **Fiscal deficit** - Fiscal deficit target is at **5.9%** for 2024 and aims to reduce it to **4.5% by 2026**.
- This is still higher than the **3% target** specified in the **FRBM Act, 2013**.
- **Debt-GDP ratio**- **NK Singh Committee** recommended a debt-GDP ratio of **60% to be achieved by 2023**, but the current ratio is about **81%**.
- This indicates high level of public debt and low revenues.
- **Cost of debt servicing**- India spends about **5.5% of its GDP** on servicing public debt which is more than the combined spending on health and education.
- **Investment**- Most of the debt is financed by **household savings** which curtails private investment.
- **Expenditure profile**- Majority of the government spending is on **interest payments, subsidies and pensions** which leaves little room for fiscal policy flexibility.
- The government has increased its capital expenditure from **12% to 22%** of the total expenditure which is considered to be productive and growth-enhancing spending.
- **Revenue**- Tax collection especially GST has been increasing over the years, still **tax buoyancy is low**.

What lies ahead?

- **Tax reforms**- Utilise technologies like **Artificial Intelligence- Machine Learning** to widen the tax base and ensure compliance.
- **Rationalise GST slabs**- This can be done to simplify the tax system and reduce tax exemptions and rates to improve the tax efficiency.
- **Revisit expenditure composition**- As per **Economic Survey 2020-21**, the quality of expenditure can be improved by rationalising subsidies, increasing capital expenditure, and adopting outcome-based budgeting.
- **Sectoral reforms**- The government has to initiate sectoral reforms, especially in the power and informal sectors, to improve the efficiency and performance of these sectors.
- **Formalisation**- As per World Bank, the informal sector reforms include enhancing access to finance, social protection and digital platforms.

India's subsidies as a % of GDP were 1.4% in 2020, which was higher than the global average of 0.9%

FRBM Act, 2003

- **Aim**- To ensure fiscal discipline for the Centre by setting targets including reduction of fiscal deficits and elimination of revenue deficit.
- **Main objectives**
 - To introduce transparent fiscal management systems
 - To introduce a more equitable and manageable distribution of the country's debts over the years
 - To aim for fiscal stability in the long run

- **Key features-** The FRBM Act made it **mandatory** for the government to place the following along with the Union Budget documents in Parliament annually.
 - Medium Term Fiscal Policy Statement
 - Macroeconomic Framework Statement
 - Fiscal Policy Strategy Statement
- **Escape clause-** In grounds of national security, calamity, etc, the set targets of fiscal deficits and revenue could be exceeded.
- **NK Singh Committee-** In the Union Budget 2016-17, it was proposed to constitute a committee to review the implementation of the FRBM Act and give its recommendation.

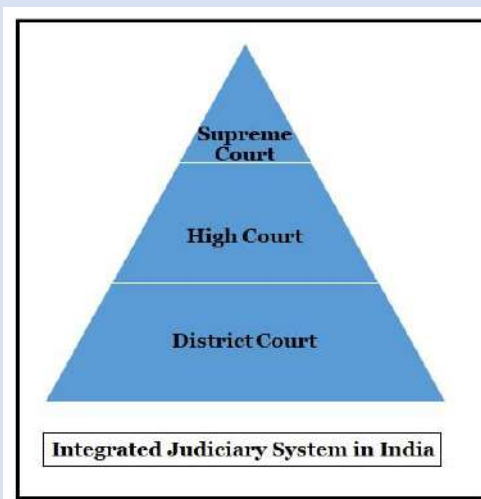
5.8 Revamping Indian Judiciary

Why in news?

The Supreme Court needs a structural overhaul to transform the Constitutional setup.

Supreme Court's Structure

- India has a single integrated system of judiciary in view of a single Constitution.
- **Establishment-** It was inaugurated on January 28, 1950.
- It succeeded the Federal Court of India and enforces both Central as well as the State laws.
- **Constitutional provision-** Articles 124 to 147 in Part V of the Constitution deal with the organisation, independence, jurisdiction, powers, procedures etc., of the Supreme Court (SC).
- It acts as the custodian of the Indian Constitution and the protector of the Fundamental Rights.
- **Jurisdictions-** Supreme Court has 3 jurisdictions namely original, appellate and advisory.
- It serves as a Constitutional Court as well as a Court of Appeal.
- **Article 145** – It says that a special bench of SC that comprises of at least 5 judges and deals with matters involving substantial question of law as to interpretation of the Constitution or the power of the President to consult the Court (Article 143).
- **Article 137-** It empowers the Supreme Court with the judicial review through which it can declare any law as void when it is unconstitutional or in derogation with the Fundamental Rights.
- **Article 13-** The laws which are contrary to the Fundamental Rights are declared as void by the judiciary.
- **Article 50** – It ensures the separation of Judiciary from Executive.



Why there is a need to revamp Supreme Court?

- **Wider jurisdiction-** The Supreme Court hears matters between the Centre and the States, as well as between two or more States; rules on civil and criminal appeals; and provides legal and factual advice to the President.
- **Complexity-** Supreme Court has different types of Benches like Division Bench, Full Bench and Constitutional Bench and has diverse jurisdictions to discuss on various topics.
- **Insignificant cases-** Some cases are not very significant or urgent, thus taking up the court's time and resources.
- **Backlog-** Supreme Court has a huge backlog of pending cases, which affects its efficiency and quality of justice.
 - At present, there are 79,813 cases pending before the 34 judges of the Supreme Court.
- **Delay in justice-** Justice delayed is justice denied. One of the main reasons for the delay of justice is that the institution of court cases exceeds its disposition.

- **Overburden-** The increasing number of PILs has put a burden on the judiciary, which is already struggling to handle the backlog of cases.
- **Prison overcrowding-** Much of the prisoners in Indian prisons are under trials, who are confined to the prisons until their case finds a definitive conclusion.
- **Judicial overreach-** The judiciary has also been criticized for overstepping its boundaries and interfering with the functioning of the executive and legislative branches of government.
- **Regional imbalance-** The top court receives more appeals from High Courts that are near it, such as Punjab and Haryana, Allahabad, and Delhi whereas courts that are far away had fewer appeals filed, due to difficulties in accessibility and costs.

What recommendations were given to revamp Supreme Court?

- **Splitting the Supreme Court-** 10th and 11th Law Commissions proposed to divide the SC into 2 divisions- the Constitutional Division and the Legal Division.
- This would make justice more widely available and would significantly decrease the fees that litigants have to pay.
- **Court of Appeal-** The Supreme Court suggested creating a National Court of Appeal that would handle special leave petitions thus allowing the SC to focus on constitutional and public law matters.
- **Regional benches-** The 229th Law Commission Report recommended setting up 4 regional benches (Delhi, Chennai or Hyderabad, Kolkata, and Mumbai) to hear non-constitutional issues.
- **Judicial efficiency-** Regional benches would reduce the backlog of cases and enable the Supreme Court to deal with important cases.

Steps taken to simplify Legal Process

- **National Judicial Data Grid-** It is a web-based platform that provides case status, pendency, and disposal data of district and subordinate courts across the country.
- **eCourts Mission Mode Project-** Launched by the Department of Justice in collaboration with the Supreme Court to provide e-filing, digital case management, citizen-centric services etc.
- **Scheme for Action Research and Studies on Judicial Reforms-** It is implemented by the National Mission for Justice Delivery and Legal Reforms and provides financial assistance for conducting research, evaluation, monitoring, capacity building, and innovation in the areas of justice delivery, legal research and judicial reforms.
- **FASTER 2.0-** Fast and Secure Transmission of Electronic Records - Launched by the Supreme Court e-Committee to digitize all the judicial records and enable their online transmission between courts, tribunals, and other stakeholders.

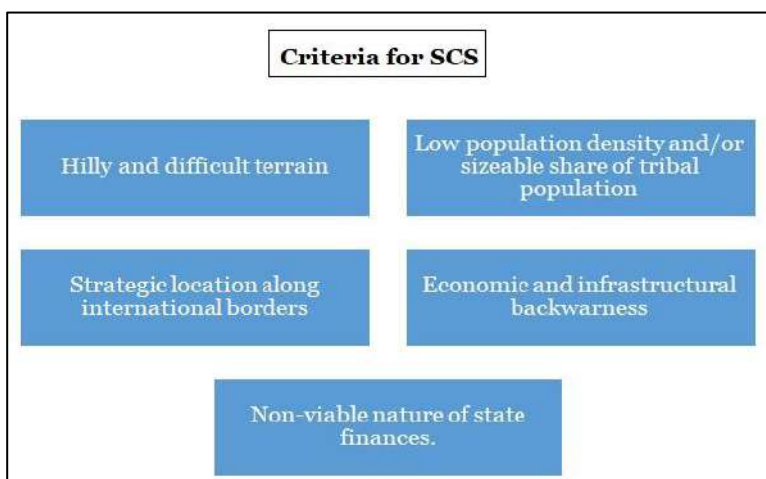
5.9 Bihar's demand for Special Category Status

Why in news?

In light of the "[Bihar Caste-based Survey, 2022](#)" which showed that almost 33% of Bihar's people are poor, the State government seeks Special Category Status.

What is Special Category Status (SCS)?

- It is a classification granted by the Centre to assist the development of States that face geographical or socio-economic disadvantages.
- **Launch year-** It was introduced in 1969 on the recommendation of the 5th Finance Commission (FC).
- **Gadgil formula-** It was named after the then Deputy Chairman of the Planning Commission, Dr Gadgil Mukherjee which earmarked nearly 30% of the total central assistance for States to the SCS States.



- **Authority to grant SCS status-** National Development Council.
- **Discontinuation-** It was discontinued in 2015 after the 14th Finance Commission recommendations.

About	Special Category Status	Special Status
Provision	It is granted by the <u>National Development Council</u> , which is an administrative body of the government	The Constitution (<u>Article 371 to 371-J</u>) provides special status through an Act that has to be passed by 2/3 rd majority in both the houses of Parliament
Powers	Deals only with economic, administrative and financial aspects.	Empowers them with legislative and political rights.
Applicable States	11 States - Assam, Sikkim, Manipur, Nagaland, Himachal Pradesh, Mizoram, Meghalaya, Tripura, Arunachal Pradesh, Uttarakhand and Telangana.	12 States - Maharashtra, Gujarat, Nagaland, Goa, Assam, Manipur, Andhra Pradesh, Arunachal Pradesh, Telangana, Sikkim, Mizoram and Karnataka.

What are the benefits of SCS?

- **Centre-State funding-** Centrally sponsored schemes is divided in the ratio of **90:10**, far more favourable than the 60:40 or 80:20 splits for the general category States.
- **Special treatment-** Preferential treatment in getting Central funds as **30% of the Centre's gross budget** also goes to special category.
- **Incentives-** These States can avail the benefit of debt-swapping and debt relief schemes.
- **Tax exemption-** States with special category status are exempted from customs duty, corporate tax, income tax and other taxes to attract investment.
- Concession is provided to excise duty for attracting industries to the State.
- **Carry forward-** If they have unspent money in a financial year, it does not lapse and gets carry forward for the next financial year.
- **Increased devolution-** Assistance to SCS states has been subsumed in an increased devolution of the divisible pool funds for all States (increased to 41% in the 15th FC from 32%).

Other States demanding SCS

- **Andhra Pradesh-** Since its bifurcation in 2014, it has asked for a grant of SCS on the grounds of revenue loss due to Hyderabad going to Telangana.
- **Odisha-** Due to its vulnerability to natural calamities such as cyclones and a large tribal population (nearly 22%).
- **Centre's response-** It denied citing the 14th FC report, which made a recommendation to the Centre that no State be accorded the SCS.

Why Bihar is demanding SCS?

- **Poverty-** As per Bihar caste survey, nearly one-third of Bihar's population continues to live in poverty.
- **Backwardness-** Bihar is one of the most backward States in India with a per-capita GDP of around 54,000 rupees, which is less than half of the national average.
- **Low resource-** The State faces challenges such as lack of natural resources, inadequate water supply for irrigation, frequent floods and droughts, and low human development indicators.
- **Industrial decline-** Bifurcation of Bihar in 2000 resulted in the loss of mineral-rich areas and major industries to Jharkhand, leaving Bihar with a weak industrial base and low revenue.
- **Poor investment-** It has been struggling to attract private investment and create employment opportunities for its large population.
- **Need financial assistance-** Bihar has been demanding the SCS since 2010, to get more financial assistance and tax incentives from the Centre.

Is Bihar demand justified?

- **SCS criteria-** It does not have hilly and difficult terrain, which is a major factor for granting SCS.
- **Raghuram Rajan Committee-** It was set up in 2013 to suggest a new formula for allocating funds to the States.

- The committee ranked the States based on a *multi-dimensional index*, which included per capita consumption, poverty ratio, education, health, household amenities, urbanization, financial inclusion, and connectivity.
- Bihar was ranked the lowest among all the States, indicating its least developed status.
- The committee recommended that the Centre should provide a *fixed amount of funds to each State* based on their development needs, and not on the basis of SCS or non-SCS.
- The committee also suggested that the States should be given more flexibility and autonomy in spending the funds according to their priorities.
- The committee's report was not accepted by the Centre, and the SCS issue remained unresolved.

6. GOVERNMENT POLICIES AND INTERVENTIONS

6.1 Broadcasting Services (Regulation) Bill, 2023

Why in news?

Recently, the draft Broadcasting Services (Regulation) Bill, 2023 was released by the Ministry of Information & Broadcasting.

Broadcasting Regulations in India

- **Ministry of Information and Broadcasting**- It is the focal point for matters related to private broadcasting, public broadcasting service (Prasar Bharati), multi media advertising, regulation of print media etc.,
- **Telecom Regulatory Authority of India (TRAI)** - It regulates the tariffs payable to subscribers of television channels and service providers in the broadcasting sector.
- **Electronic Media and Monitoring Centre**- It was established to supervise, monitor and record the content that is broadcast on Television channel in accordance with the government norms and regulations.
- **Prasar Bharati**- It is a statutory autonomous body set up by Parliament under Prasar Bharati Act 1990, and comprises of Doordarshan Television broadcasting and Akashvani.
- **Cable Network Act 1995**- It governs broadcaster and distribution registration, and the State government has established many monitoring agencies to ensure proper implementation of the Act.

What are the key features of Broadcasting Services (Regulation) Bill 2023?

- **Aim**- To bring a consolidated legal framework for the broadcasting sector.
- **Modernization**-The Bill seeks to replace *Cable Television Networks (Regulation) Act, 1995* and other policy guidelines governing the broadcasting sector.
- **Extension**- It extends the regulatory purview to the OTT content, digital news and current affairs which are currently regulated through *Information Technology Act, 2000*.
- **Regulation**- The bill provides regulatory provisions for various broadcasting services under a single legislative framework.
- **Adaptability**- The bill adapts to the dynamic world of [OTT](#), Digital Media, DTH, IPTV, and more, promoting technological advancement and service evolution.
- **Comprehensive** - It provides definitions for contemporary broadcasting and other important technical terms for the first time.
- **Differentiated approach**- It allows for a differentiated approach to Programme and Advertisement Code across various services and requires self-classification by broadcasters and robust access control measures for restricted content.
- **Inclusivity**- It aims to make broadcasting more inclusive and accessible to people with disabilities through the use of subtitles, audio descriptors, and sign language.
- It also has a provision for *Disability Grievance Officer*.

- **Accessibility-** It has provisions for infrastructure sharing among broadcasting network operators and carriage of platform services.
- The Bill streamlines the 'Right of Way' section to address relocation and alterations more efficiently
- **Dispute Resolution Mechanism-** The bill established a structured mechanism for dispute resolution.
- **Penalty-** It provides statutory penalties for operators and broadcasters, such as advisory, warning, censure, or monetary penalties.

Institution	About
Content Evaluation Committee	Self-regulation
Broadcast Advisory Council	Advise the Central government on programme code and advertisement code violations

What are the concerns of the bill?

- **Affects autonomy-** The regulation could affect the autonomy, as OTT platforms work on a "pull model" where consumers choose the content.
- **Impact on content innovation-** The stringent and subjective codes could lead to content censorship and affect the audience experience.
- **Over regulations-** The bill extends the regulatory purview to OTT platforms which are regulated under IT Act.
- **Pricing regime-** As OTT contents are regulated under the bill, the government may bring the pricing regime for OTT content as it has done for television channels

7. GOVERNANCE

7.1 Extension of Food Security Program (PMGKAY)

Why in news?

Recently, Prime Minister Narendra Modi has announced an extension of the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), the free ration scheme for another 5 years.

What is PMGKAY?

- It is the world's largest food security welfare scheme.
- **Launch year-** 2020.
- **Aim-** To provide free food grains to the poor and needy through the Public Distribution System (PDS).
- **Eligibility-** It will be provided to around 80 crore beneficiaries covered under both categories of *National Food Security Act, 2013 (NFSA)*
 - **Antyodaya Anna Yojana (AAY)-** 35 kg food grains per household per month
 - **Priority Householders (PHH)-** 5 kg per person per month
- It also provides an *additional 5 kg of food grains* per person per month for free, over and above the existing entitlements.
- The scheme can be availed through the [One Nation One Ration Card \(ONORC\) plan](#).

Features	About
Coverage	Around 66% of the Indian population is covered under the scheme
Food security	Each one of them receives double of their current entitlement. This additionality is at free of cost.
Protein availability	As per regional preferences 1 kg of pulses is provided to families.

- **Merger-** The government subsumed the PMGKAY under the NFSA Act and the entire quantity of entitlement under the NFSA would be available free of cost.

- The scheme has been extended many times ever since its introduction.

What is NFSA 2013?

- Aim-** To provide for *food and nutritional security* in the human life cycle approach, by ensuring access to adequate quantities of quality food at affordable prices to people to live a life with dignity.
- Coverage-** It provides coverage for nearly 2/3rd of the country's total population based on the basis of *Census 2011*.
 - Rural population- 75%
 - Urban Population- 50%
- Eligibility-**
 - Priority Households (PHH)** - Covered under Targeted Public Distribution System (TPDS), according to State government guidelines
 - Existing Antyodaya Anna Yojana (AAY) Households**

The Act marks the paradigm shift in the approach of food security from welfare to rights-based approach.

Category	Entitlements
AAY Households	35 kg of food grains
PHH	5 kg of food grain per person per month will be given at Rs 3/2/1 per kg for rice/ wheat/coarse grains
Maternity benefit	Meals and monetary support of not less than Rs 6000 to pregnant women and lactating mothers during pregnancy and 6 months after the child birth
Children	Meals is provided up to 14 years of age

- Special provisions** - Special provisions have been made for pregnant women and lactating mothers and children (6 months to 14 years of age), by entitling them to receive nutritious meal free of cost through Integrated Child Development Services (ICDS).
- Responsibility-** NFSA defines the joint responsibility of the Centre and State/UT Government.

Government	Functions
Central Government	<ul style="list-style-type: none"> Allocation of required food grains to State/UTs Transportation of food grains to State/UTs Providing central assistance to State/UTs for delivery of food grains from designated Food Corporation of India godowns to the doorstep of Fair Price Shops (FPS)
State Government	<ul style="list-style-type: none"> Identification of eligible households and issuing ration cards to them Distribution of food grains to eligible households through FPS, issuance of licenses to FPS shops Setting up effective grievance redressal mechanism Necessary strengthening of TPDS

- Direct Benefit Transfer-** It reduces the need for huge physical movement of food grains.
- Food security allowance-** Governed through the *Food Security Allowance Rules, 2015*, it is provided to beneficiaries in case of non-supply of entitled food grains or meals.
- Grievance redressal mechanism-** It is provided at State and district levels.
- Social audit-** It is authorized by State government to conduct periodic social audits on the functioning of FPS, TPDS and other welfare schemes.
- Vigilance committee-** It is appointed by State government for ensuring transparency and accountability of the TPDS.

What are the benefits of PMGKAY?

- **Eliminate Malnutrition**- Eligibility criteria would eliminate malnutrition among the vulnerable section of the country.
- **Reduce child mortality**- The pregnant women are entitled to maternity benefit thus reducing the mortality rate of children which is high due to unavailability of food.
- **Better health outcomes**- Food security along with protein entitlement would improve the health of the population.
- **Affordability**- The entitlements are available free of cost to the targeted beneficiaries, thus reducing the burden on the poor people.
- **Accessibility**- Food security allowance is provided in case of non-supply of food grains, thus providing the beneficiaries the right to food even in the event of unavailability of food grains.
- **Women empowerment**- Eldest woman of the beneficiary household (18 years or above) is considered as 'Head of Family' for issuing ration cards.

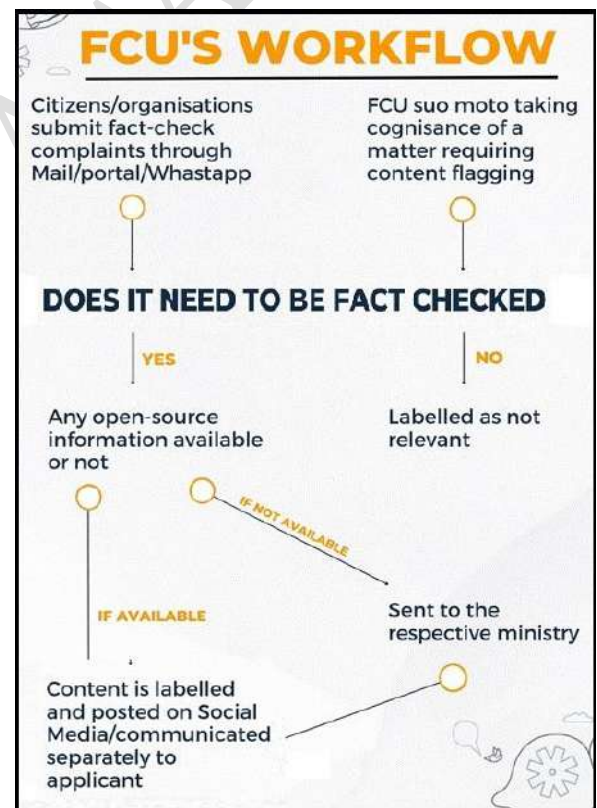
7.2 Fact Check Unit

Why in news?

Tamil Nadu government recently ordered the creation of a fact check unit to verify the authenticity of information about the government on all media platforms.

What are the provisions of fact check unit?

- **Objective**- To act as a deterrent to creators and disseminators of fake news.
- To combat misinformation, disinformation and hate speech.
- **Power**- The unit can take suo motu cognisance of any information related to the government for fact-checking or act on complaints from various sources.
- **Key components** – It includes
 - **Social Media Cell**- To propagate the news about the government's welfare schemes and initiatives.
 - **Central task force (CTF)**- Based in Chennai, it is the official fact check unit of the State.
- **Complaint processing**- The CTF will use fact-checking tools and government sources to sort the complaints into actionable or non-actionable categories.
- **Legal action**- The CTF will seek advice from the legal and police departments and forward the actionable complaints to the relevant authorities.
- **IT Rules 2021**- It is created in reference to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, issued by the Central government to regulate online content and platforms.



Why fact check unit is unconstitutional?

- **Against Article 19**- It violates the freedom of speech and expression guaranteed by Article 19(1)(a) of the Indian Constitution.
- **Curbs dissent**- The fact check unit could potentially censor any dissenting or critical views of the government.
- **Affect media's independence** - It could undermine the role of independent media and journalism.
- **Lack of clarity**- The unit lacks clear criteria for determining what constitutes fake, false or misleading information.

- **Political interference-** The fact check unit could be influenced by political or ideological biases and arbitrarily label any information as false or misleading, without providing evidence or justification.
- **Infringes Article 21-** It could access and monitor the online activities of the users and compel the intermediaries to disclose their personal information thus infringing the right to privacy.
- **Limitations of GO-** The constitutional right to express opinions and information can only be restricted by a law passed by the State, not by a Government Order (GO).
- **Lack of fair hearing-** The order does not give a chance for the author of the post to defend themselves, and gives the government the power to decide and act on the authenticity of the information.
- **Conflict of interest-** The government becomes the judge, jury, and executioner on the authenticity of information.
- **State run fact check unit-** European Commission's *Code of Practice on Disinformation* constitutes independent network of fact-checkers, but the State run units will harm the society.
- **Exceeded authority-** It exceeds the scope of *Information Act, 2000* under which it is established.
- The intermediaries could lose their independence and efficiency due to the unit, which could burden them with excessive and unjustified duties, without any legal authority or approval.
- **Centre's FCU-** The Centre's constitution of FCU under IT rules, 2023 is put on hold after it was challenged before Bombay High Court.

Centre's Fact Check Unit	
•	The Centre has decided to create an FCU to track fake and misleading news related to the government on online platforms such as Facebook and Twitter.
•	Amended IT rules 2021- It allows the IT ministry to appoint a fact-checking body that will take a call on whether online information related to the Union government is accurate.
•	Safe harbour protection- The online intermediaries will have to take down the content labelled as fake by the FCU or lose their legal immunity against third-party content online.

What lies ahead?

- The monitoring network should follow *principles of natural justice* including giving prior notice, right to appeal and judicial oversight.
- FCU need to be transparent and non-discriminatory to prevent selective application.

8. HEALTH

8.1 Concerns with Generic Medicine

Why in news?

Patients in India rely on the advice of unqualified medical shop sellers instead of doctors when buying medicines.

What is the difference between generic and branded medicines?

About	Branded drugs	Generic drugs
Definition	They are also called as the "Innovator drugs" and are at first available in the market as new chemical entities	It is a pharmaceutical drug that contains the same chemical substance as a drug that was originally protected by chemical patents
Trade name	Sold under the manufacturer's name	Not sold under the manufacturer's name
Affordability	High Cost	Low cost
Patent protection	Produced by a company which holds the patent	Available at the market by the pharma companies only after the patent protection period expires
Animal and clinical study	Essential to perform tests	Not required

Features	The company formulates the chemical composition and establishes the dosage, strength, efficacy, administration etc.	The active ingredients, dosage, efficacy and administration are exactly same as that in branded drug
Competition	Little competition as patent protected	Competition is heavy due to price variation

What are the challenges and benefits of generic medicines?

Issues	Challenges	Benefits
Pharmaceutical companies	Big pharmaceutical companies that invented the drug will lose business Quality control in smaller manufacturers	Small companies can manufacture generic drugs
Doctors	Lose control over which company product to write. Accountability if the drug dispensed by the chemist is substandard	Do not need to know all brand names of a pharmaceutical compound and not influenced by promotional activity of some companies,
Chemist	Decreased profit margins in generics as compared to branded drugs	Get chose different company drugs to dispense (some may be of doubtful quality)
Patients/Public	May run the risk of getting sub- standard medicines	Reduced patient expenses for medication
Quality of drugs	Quality control standards are the same for all manufacturers. India is the largest manufacturer and exporter of generic drugs which meet international standards. However smaller companies may not be as robust.	With generic drugs, it is easier to regulate dosage of individual drugs which is not possible in Fixed Drug Combinations (FDCs) of branded drugs. The government also bans many irrational FDCs from time to time.
Inducements and promotional activities	Those who receive inducements (as pharma companies make less money hence cannot offer inducements)	State and Central Governments: Spend less on reimbursement of medical expenditure on their employees entitled to medical care such as CGHS, Railways, Defence, ESI, RSBY etc.
Access to treatment	Market share of big pharma companies shrinks	Access and affordability of medical care increases benefitting especially the poor.

What are the other challenges associated with generic medicines?

- **Deciding authority-** The doctors don't have the freedom to choose the brand of generic medicine for the patient, only salesperson decides the brand.
- **Unethical practices-** There is a corrupt link between pharmaceutical companies and doctors who can be influenced to give in to unethical marketing and promotional offers or kick-backs.
- **Counterfeit marketing** - Big pharma companies focus on profit rather than quality and promote their costly propaganda against generic medicines.
- **Lack of accountability-** There is no clarity about who will ensure the compliance to the quality standards of drugs.

Hathi Committee in 1975 recommended for the gradual elimination of brand names.

- **NMC directive**- National Medical Commission's (NMC) notification asking registered medical practitioners to prescribe only generic medicines but was later suspended due to protests.
- **Poor quality**- Unauthentic and sub-standard medicines stands at 4.5% and 3.4%, which will directly impact patients' health.
- **Lack of essential medicine**- Non essential medicines like vitamin tonics, cough syrup etc., are available in pharmacy but the rate of essential medicine is low.

Steps taken by India to promote Generic Drugs

- **Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)**- It is implemented by *Ministry of Chemicals and Fertilizers* to provide quality generic medicines at affordable price.
- Each batch of drug is tested at laboratories accredited by 'National Accreditation Board for Testing and Calibration Laboratories (NABL).
- **Pharmaceuticals and Medical Devices Bureau of India**- It procures medicines only from *World Health Organization – Good Manufacturing Practices (WHO-GMP)* certified suppliers.
- **Janaushadhi Sugam**- It is a mobile application that provides information to public about location of Jan Aushadhi Kendra's.
- **Free drug initiative**- Implemented under *National Health Mission (NHM)*, it aims to provide essential generic drugs free of cost in public health facilities.
- **National Pharmaceutical Pricing Authority** – It fixes the ceiling price of Scheduled medicines specified in the Schedule-I (essential medicines) of the *Drugs (Prices Control) Order, 2013*.

What lies ahead?

- **Quality assurance**- Government must ensure the quality of medicines produced, procured, and supplied through its Universal Health Coverage system as well as the private health-care network.
- **Periodic testing**- The medicines that fail periodic quality test must be banned, with punitive action taken against manufactures.
- **Rules for generic drugs**- Government should assure that the medicines in the markets are of standard quality, this would ensure confidence in doctors.
- **Proper monitoring**- To ensure affordable medicines for all under [Universal Health Care](#), free medicines and diagnostics are acceptable, but implementation needs to be monitored.
- Promoting generic drugs nationally builds on the rich experience across states especially Rajasthan and Tamil Nadu who are pioneers in introducing generic drugs in public health system.

9. BILATERAL ISSUES

9.1 India- Saudi Arabia Relation

Why in news?

Crown Prince of Saudi Arabia visited India for participating in G20 summit and also co-chaired the 1st meeting of India-Saudi Arabia Strategic Partnership along with Indian PM.

What are the pillars of India- Saudi Arabia relationship?

- **Historical ties** - The two countries established diplomatic relations in 1947 and 2021-22 marked 75 years of establishment of diplomatic relations.
- **Delhi Declaration** in 2006 was a watershed moment in India – Saudi Arabia relationship.
- **Riyadh Declaration** in 2010 elevated bilateral ties to a strategic partnership.
- **Diplomatic relationship** - Saudi Arabia's highest civilian honour, **the King Abdulaziz Sash** was awarded to Indian PM Narendra Modi.
- The visit of Crown Prince to India in February 2019 allowed investment of approximately 100 billion dollars in India and enabled the kingdom to join in **International Solar Alliance (ISA)**.

- **Strategic Partnership Council (SPC) Agreement**, signed in 2019 established a high-level council to steer the Indo-Saudi relationship.
- **Economic Ties** – India is Saudi Arabia's **2nd largest** trade partner and Saudi Arabia is India's **4th largest** trade partner.
- As of January 2022, there were 2,783 Indian companies registered as joint ventures/ 100% owned entities with investments worth approximately \$2 billion in the kingdom.
- Among the major proposed investments is the \$44 billion *West Coast Refinery & Petrochemicals Project* in Maharashtra, which is being jointly built by Saudi Aramco and an Indian consortium.
- **Energy cooperation** – Saudi Arabia is a key partner for ensuring India's energy security.
- Saudi Arabia was India's **3rd largest** crude and petroleum products source for FY23.
- India also imports LPG from Saudi Arabia.
- **Defence Partnership** - Two editions of the bilateral naval exercise, *Al Mohed al Hindi*, have been concluded so far.
- **Diaspora** – The Indian community is more than 2.4 million and is the *largest expatriate community* in the Kingdom.
- India's **e-Migrate system** integrated with the Kingdom's **e-Thawtheeq system** to streamline the migration process for workers.
- Saudi Arabia supported in evacuation of Indian nationals stranded in Sudan through Jeddah under [Operation Kaveri](#).
- **Cultural Relationship** – *Indian Cultural Week* was organized in Riyadh in collaboration with the Saudi Ministry of Culture in 2012.
- India participated as the 'Guest of Honour' at the prestigious Saudi National Festival of Heritage and Culture – *Janadriyah* in 2018.
- **Counter terrorism** – Both nations stressed the importance of combating terrorism and its financing.
- They emphasized that terrorism, in all its forms, remains one of the gravest threats to humanity.

The International Solar Alliance (ISA) was a joint effort by India and France to mobilize efforts against climate change through deployment of solar energy solutions. It is guided by its 'Towards 1000' strategy.



What about the recent developments?

The two sides signed 8 agreements aftermath of G20 Summit in 2023.

- **Diplomatic Ties** – 1st meeting of the India-Saudi Arabia Strategic Partnership Council.
- **Energy Ties** – Both agreed upon upgrading their hydrocarbon energy partnership to a *comprehensive energy partnership* for renewable, petroleum and strategic reserves.
- **Investment promotion** – Both agreed to create a joint task force for \$100 billion in Saudi investment.
- **Currency convertibility** – Discussion for possibility of trading in local currencies.
- **Trade agreements** – Both were expediting negotiations for a [free trade agreement between India and the Gulf Cooperation Council \(GCC\)](#) of which Saudi Arabia is a member.
- **Economic corridors** – India, Saudi Arabia, UAE and USA jointly announced the [India-Middle East-Europe Economic Corridor \(IMEC\)](#).
- **Global peace and stability** – Both nations stressed the importance of achieving security and stability in Afghanistan.

GCC is a regional political and economic alliance of 6 countries in the Gulf region - Saudi Arabia, the UAE, Qatar, Kuwait, Oman and Bahrain.

IMEC is a massive infrastructure project that would connect India to Europe via West Asia, and could rival China's Belt and Road Initiative.

- **Cooperation Agreements** – Cooperation between
 - India's Central Vigilance Commission and Saudi's anti-corruption unit,
 - Investment entities, small and medium enterprises banks,
 - National Archives of the two countries, and on
 - Desalination and renewable energy

What are the concerns?

- The political scenario of the West Asia or Middle East are complex and multidimensional.
 - Example: Saudi Arabia is rival with Iran and Turkey.
- India has close ties with both Saudi Arabia and Iran and thereby straining the relationship at times.
- Increased engagement of kingdom with China as it is their biggest trading partner.
- Riyadh still helps Pakistan with economic aid.

What lies ahead?

- India should frame a dedicated policy for west Asia on similar lines of Act East Policy.
- Saudi Arabia is consolidating its partnership with the US, India, and Europe which need be encouraged.
- India should use every opportunity to engage with Saudi Arabia for energy security and for maintaining peace in the neighbourhood.

9.2 Espionage Charges on Indian Navy Veterans

Why in news?

A Qatari court sentenced 8 Indian Navy veterans to death on charges of spying for Israel, thus straining the bilateral relations between the two countries.

What is the bilateral relation between India-Qatar?

- **Political relations-** There has been regular exchange of high-level bilateral visits.
- Both countries build a forward-looking partnership by further broadening and deepening the bilateral engagement in various arenas.
- **Economic relations-** India's bilateral trade with Qatar in 2020-21 was US 9.21 billion dollars.
- Qatar is the *largest supplier of LNG* to India, accounting for over 50% of India's global LNG imports.
- **Investment-** Joint Task Force on Investment has been set-up between both the countries to facilitate investments by *Qatar Investment Authority (QIA)* into India, and also to explore Qatari investments in the entire energy value-chain in India.
- **Pandemic cooperation-** During COVID-19 *Qatar Fund for Development (QFFD)* sent medical relief material to India for combating second wave of pandemic.
- **Defence-** India regularly participates in the biennial *Doha International Maritime Defence Exhibition and Conference (DIMDEX)* in Qatar.
- *India-Qatar Defence Cooperation Agreement*, signed in 2008, was further extended for a period of 5 years in 2018.
- **Cultural relations-** Cultural ties between India and Qatar are deep-rooted and actively nurtured by both sides.
- *Agreement on cultural cooperation* was signed in 2012.
- The year 2019 was celebrated as *India-Qatar Year of Culture*.
- Qatar is co-sponsor of declaring *June 21 as International Day of Yoga* in United Nations.
- **Diaspora-** There are over 700,000 Indian nationals residing in Qatar, the largest expatriate community in Qatar.

Gulf Cooperation Council (GCC)

- It is a regional political and economic alliance of 6 countries in the Gulf region - Saudi Arabia, the UAE, Qatar, Kuwait, Oman and Bahrain.
- Headquarter** - Riyadh, Saudi Arabia
- Aim** - To achieve ever closer union between the energy rich Gulf countries.
- Significance** - GCC has over 8.5 million non-resident Indians, constituting around 65% of total NRIs.
- Al-ula declaration**-During the 41st GCC summit, it was signed based on greater cooperation within the Council.

GCC	
Founded in	1981
Headquarters	Riyadh, Saudi Arabia
India's membership	India is not a member



What is the issue about?

- Issue** - 8 former Indian Navy officials working for a Doha based company were sentenced to death by a Qatari court.
- Initial reports suggest that the authorities apprehended the officials under *suspicion of engaging in espionage for Israel*, specifically regarding Qatar's military submarine program.
- India is exploring all legal options to save the Indians and has taken up the matter at various official and political levels with Qatar.
- Expatriation** - Qatar is a friendly foreign country and there is an existing bilateral agreement to expatriate convicted citizens.
- However, *Article 4 of the agreement excludes the death penalty.*

What are the options that India can explore?

- Legal process**- The case is in '*The Court of First Instance*'. The Indian government can help the Indians challenge the death sentence in higher courts, and seek reprieve from the death penalty.
- Mercy petition**- Indian government is helping the Indians to file a mercy plea before Emir of Qatar.
- Strategic diplomacy**- India should use diplomatic channels, bilateral talks, and international platforms like *International Court of Justice* to secure the release of detained veterans.
- Engagement**- India should engage with the Indian diaspora in Qatar and the US to leverage their influence.
- Trust building**- India's response should be measured and phased, ensuring room for de-escalation and maintaining the balance in West Asia.
- Diplomatic challenge**- India has to appeal to the Emir's clemency and balance its relations with Qatar and other regional actors.
- Potential economic actions**- India can diversify its energy sources and expedite its renewable energy initiatives to reduce the dependency on Qatar for energy.

Related links – [Kulbhushan Jadav Case](#), [Italian Marines' Case](#)

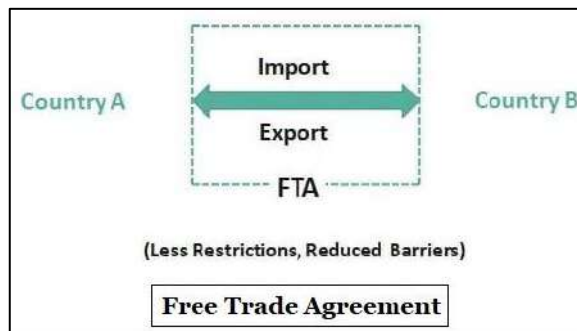
9.3 India-UK FTA

Why in news?

India and the UK are negotiating a Free Trade Agreement (FTA) that will reduce tariffs and non-tariff barriers on goods and services.

What is a Free Trade Agreement?

- It is a pact between two or more countries that reduces or eliminates certain barriers to trade in goods and services, as well as investment.
- Goal-** To facilitate cross-border transactions, increase investment prospects, promote mutual trade, and improve the ease of business.
- Bilateral FTAs-** India has bilateral FTAs with Sri Lanka, Afghanistan, Bhutan, Japan, Thailand, Singapore, Nepal, Korea, Malaysia, etc.
- Regional FTAs-**
 - South Asian Free Trade Agreement (SAFTA)- 2004
 - India-ASEAN Agreement- 2010



India-UK Free Trade Agreement (FTA)

- It is a proposed bilateral trade deal that aims to boost the economic ties between the two countries.
- Coverage-** 26 chapters including goods, services, investment, intellectual property rights, rules of origin and dispute settlement.
- Roadmap 2030 with India-** Launched by UK in 2021 and FTA is a part of this initiative.
- It outlines a vision for a transformational relationship between the two countries in the areas of trade, defence, security, climate change, health, and education.

To know more about the lessons to be learnt from UK on FTA, click [here](#)

What are the benefits of India-UK FTA?

For India

- Future collaboration-** It will serve as a template for an agreement with European Union, India's 2nd largest trade partner.
- Diversify trade-** It will help India to diversify its trade partners and counter China's influence in the region.
- Investment destination-** It will be India's 1st comprehensive deal with an industrialized nation, and will help India attract foreign investment and enhance its market access.
- Potential sectors-** It will benefit sectors such as textiles, gems and jewellery, cars, Scotch whisky and wines by lowering tariffs and increasing market access.
- Address non-tariff barriers-** FTA deals with standards, regulations and custom procedures that often hamper trade flows.
- Global trade-** FTA will complement India's other trade agreements, such as the ones with the UAE, Australia, and Israel, and will help India integrate with the global value chain.
- Bilateral ties-** FTA will strengthen the strategic partnership between the two countries, which share common values and interests.

For UK

- Boost exports-** UK wants to compensate for the loss of access to the European Single Market after Brexit and boost its exports to India.
- Access to India's market-** It will gain access to India's large and growing consumer market, as well as its skilled workforce and innovation potential.

What are the challenges with the India-UK FTA?

- Strict regulations-** Sectors such as agriculture, manufacturing face strict standards and technical requirements in UK market.
- Affect LDCs-** The FTA will affect the Least Developed Countries (LDCs) such as Bangladesh, which currently enjoy preferential access to the UK market.
- Issues with GI tag-** India normally provides general protection for violation of Geographical Indication rules, but the UK is seeking a higher level of protection.

- The enhanced protection prohibits the use of a GI if the product does not genuinely originate from the designated area, regardless of whether the public is misled or the true origin is specified.
- **Carbon border tax**- UK's possible tax on imports of high-carbon goods like steel as it mimics the European Union's [carbon border adjustment mechanism \(CBAM\)](#) would affect India's exports.
- **Rules of origin**- It is getting increasingly difficult as the present-day manufacturing is progressively integrated with global supply chains in a much more complex manner than ever before.
- **Non trade issues**- Issues such as labour, sustainability, climate change, emission etc., are indeed complex and offers formidable challenges for Indian negotiators to agree with.

What lies ahead?

- As FTAs are based on mutual benefits, India should negotiate firmly for the UK to offer similar elevated GI protection to Indian products.
- There need to be a more balanced and reciprocal trade relationship, potentially opening new markets and enhancing the global standing of Indian products.

10. INTERNATIONAL ISSUES

10.1 Pakistan's Anti-Immigration Policy

Why in news?

Recently, Pakistan government launched a nationwide deportation operation against 17 lakh undocumented Afghan refugees.

Why there is huge influx of Afghan refugees in Pakistan?

- According to estimates, more than 95% of refugees in Pakistan, both documented and undocumented, are Afghan nationals.
- **Soviet invasion**- In 1979, Soviet invaded Afghanistan, resulting in steady migration of people to neighbouring Pakistan.
- **US invasion**- United States invaded Afghanistan after the September 11 attack.
- **Rise of Taliban**- Refugees International, an independent humanitarian group said that since the fall of Kabul to the Taliban in 2021, more than 600,000 Afghans have fled to Pakistan.

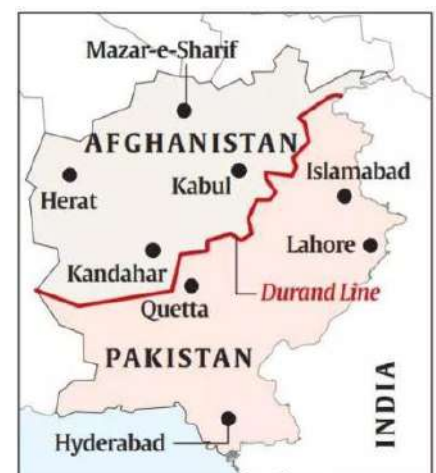
Afghanistan and Pakistan share a 2,640km long border which passes through rugged mountains, densely forested valleys and narrow rock passages. Its topography makes it porous and difficult to control.

What is the deportation about?

- **Deportation**- The surge in violence this year triggered Pakistan to launch a nationwide deportation operation.
- Afghan refugees require a Proof of Registration (PoR) card to legally remain in Pakistan.
- **Afghanistan's response**- Afghan government led by the Taliban called the deportation as unacceptable and asked Pakistan to reconsider the decision.
- **Deportations in the past**
 - **2016** - More than 600,000 Afghan immigrants, returned to their country, according to data compiled by the United Nations High Commissioner for Refugees (UNHCR).
 - **2018**- Almost 50,000 Afghan citizens, both registered and undocumented, were expelled, according to the UNHCR.

What are the implications of this move?

- The alarm bells ring louder for minorities, women and journalists who are being forced to return to a country languishing under the Taliban regime.
- This move would particularly put women and girls in grave danger as they would be exposed to persecution and other human rights violations simply because of their sex and their gender.



- It would affect people who are living and studying in Pakistan as the Taliban has imposed bans on young and unmarried women from accessing health centres, schools and universities, public spaces, or pursuing means of employment.
- Those who worked for the U.S., the U.K. and other Western countries before the Taliban took control of Afghanistan are highly vulnerable.

Is deportation legal?

- **Forceful detention**- Mass deportation and harassment are illegal, unconstitutional and violative of people's fundamental rights.
- **Principle of refoulement**- It forms an essential protection under international human rights, refugee, humanitarian and customary law.
- United Nations specifies that countries are forbidden from directly or indirectly forcing people from returning to a place of persecution.
- It states that no one should be returned to a country where they would face torture, cruel, inhuman or degrading treatment or punishment and other irreparable harm.
- **Applicability**- It is applicable to all migrants at all times, irrespective of migration status.

Human rights agencies estimate that about 60% of Afghan refugees in Pakistan are undocumented.

What is the reaction of human rights agencies?

- **Amnesty International**- Afghan refugees' lives and rights are at stake due to the collective failure of Pakistan and the international community to share the responsibility for their protection.
- **United Nations**- It called the decision a 'human rights catastrophe' which will put the refugees who fled persecution in neighbouring Afghanistan at grave risk.
- **Rights group**- They have urged Pakistan to stop the crackdown against, and harassment of, Afghan refugees across the country in keeping with international legal obligations.

10.2 US-China Summit

Why in news?

Recently, the US President Joe Biden and the Chinese President Xi Jinping met on the sidelines of the [Asia Pacific Economic Cooperation \(APEC\)](#) Summit in San Francisco in 2023.

What are the key highlights of US-China Summit?

- **High level diplomacy**- Apparent realisation that high-level engagement and open channels are key in preventing competition from sliding into conflict.
- **Military cooperation**- It focussed on the restoration of military-to-military communications which is crucial for managing tensions between the two nations.
- **Counter narcotics**- China pledged to curb the outbound shipments of substances used to make fentanyl, a powerful opioid that has contributed to many fatal overdoses in the US.
- **Technology**- Both agreed to discuss risk and safety issues involved with artificial intelligence.
- **Human rights**- US has called China to end human rights violations in Xinjiang, Tibet and other regions, all of which China has dismissed as interference.
- **Climate change**- Both countries agreed to sharply increase clean energy, displace fossil fuels and reduce emissions that are warming the planet.
- **Middle East conflict**- The complex role of both countries in the Middle East were highlighted, acknowledging the challenges and responsibilities each nation holds.
- US sought China's help to de-escalate tensions with Iran and to urge Iran not to launch proxy attacks on US targets in the Middle East as the [Israel-Hamas conflict](#) continues in Gaza.
- **Taiwan**- China urged the US to uphold commitments regarding Taiwan's independence as US maintains **One China Policy** on Taiwan.
- **Stabilise US-China ties**- Both agreed to set a minimum level of cooperation and communication to prevent their rivalry from escalating into conflict.

- This was their goal when two countries last met in Bali in 2022, but it was disrupted by a [spy balloon incident](#).

How does the US China Summit affect India's interests?

- **India-US relationship**- India is a strategic partner of US and it benefits from reduction in US-China relationship as it reduces the risk of conflict and instability in the region.
- **G-2** - A cause of concern for India is Sino-American collaboration in Asia.
- But the summit was about organising a truce rather strategic partnership that seemed possible at the turn of the century.
- **China's diplomatic push**- China's relationship with global powers and within South Asia with countries like Bhutan is a cause of concern for India, considering the unresolved India-China border standoff at the Line of Actual Control.
- **Economic impact**- Many US companies like Apple and Microsoft are encouraged to diversify and move manufacturing plants to India due to strained relationship between US and China in the past.
- **Climate change**- US and China have made pacts in the past that doesn't take India's concerns into account.
- **Geopolitical strategy**- India should closely watch the potential US-China understandings on regional security issues in the Indo-Pacific, the Middle East, and Europe

What lies ahead for India?

- **Strengthen ties**- India should take advantage of the new possibilities to strengthen its ties with the US, maintain its long-standing ties with Russia, and manage the difficult ties with China.
- **Productive engagement**- India should utilise the QUAD forum with US, Australia and Japan.
- **Structural shift**- The recent shift in US-China summit is a little cause of worry for India as its own rise in the international system allows it to effectively handle any sudden shifts in great power relations.
- **Focus on AI**- India should pay attention to new areas of US-China engagement, such as regulating artificial intelligence.
- **Lesson for India-China**- The Summit showed the importance of diplomatic engagement for preventing conflict, which can be adopted to resolve the border crisis.

G.S PAPER III

11. ECONOMY

11.1 Gender Pay Gap

Why in news?

Periodic Labour Force Survey (PLFS) in its 6th report has introduced a crucial focus on weekly hours worked, revealing that the inequality in total earnings might not capture the full picture.

Periodic Labour Force Survey (PLFS)

- **Published by** –National Sample Survey Office (NSSO)
- **Year of launch**- 2017
- **Indicators**
 - **Labour Force Participation Rates (LFPR)** - Percentage of persons in labour force (i.e. working or seeking or available for work) in the population.
 - **Worker Population Ratio (WPR)** - Percentage of employed persons in the population
 - **Unemployment Rate (UR)** - Percentage of persons unemployed among the persons in the labour force
- **Objective**-
 - To estimate the employment and unemployment indicators in time interval of 3 months for the urban areas only in the 'Current Weekly Status' (CWS).

- To estimate employment and unemployment indicators in both 'Usual Status' and CWS in both rural and urban areas annually.
- It provides quarterly data for urban areas and annual data for both rural and urban areas.

What is the latest report about?

- The 6th Annual Report of PLFS is conducted during July 2022-June 2023.
- **Key findings -**
 - **LFPR**- It increased from 37.5% in 2020-21 to 38.6% in 2022-23.
 - **UR**- It decreased from 5.8% in 2020-21 to 5.7% in 2022-23.
 - **WPR**- It increased from 35.3% in 2020-21 to 36.4% in 2022-23.

How the rural India progressed in employment?

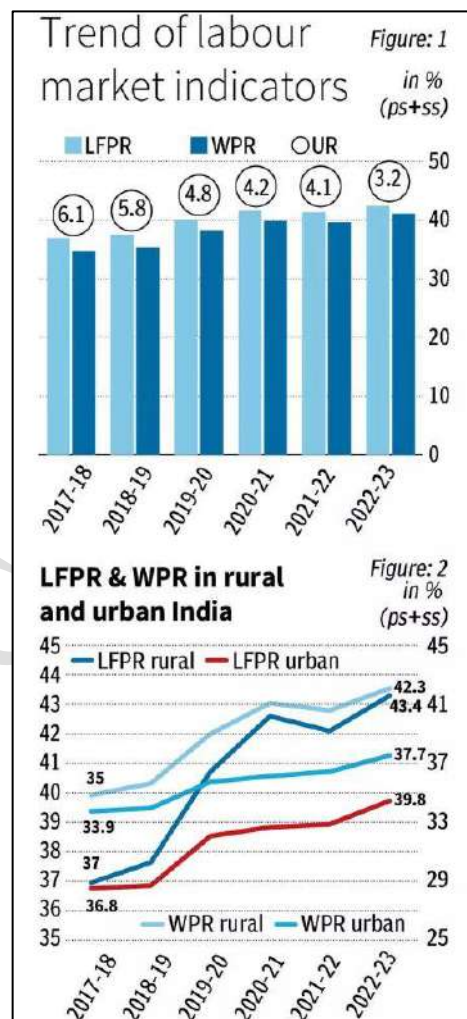
- **Rural India**- Both LFPR and WPR are increasing at a faster pace compared to urban India.
- This faster rise in rural LFPR may be attributed to the reverse migration in the rural areas in the post-pandemic years.
- **Rural female**- Employment is growing much faster among the rural female category.
 - In 2019-20, the rural female WPR recorded growth rate of 26.3% over the previous year.
- The increasing female WPR is because of the males seeking better non-farm sector jobs, while females might not be finding suitable non-farm employment, leading to their absorption in agriculture (a form of distress employment).

How does the gender earnings gap differ?

- **Work hours**- Women, on average, work fewer hours than men, attributed to a combination of social pressures and personal choices.
- In 2023, the gap in work hours was largest for self-employed workers, where men worked 50% more hours than women.
- The average hours worked per week for rural self-employed women has fallen indicating that much of the increased employment for rural self-employed women has been part-time in nature.
- **Wage disparity**- Men earn more than women across all forms of work, the gap greatest for the self-employed.
 - **Self-employment**- In 2023, male self-employed workers earned 2.8 times that of women.
 - **Regular wage workers**- Male regular wage workers earned 24% more than women and male casual workers earned 48% more.
- **Hourly and weekly earnings** - When considering hourly earnings, the gap reduces significantly for regular wage workers.
- Falling inequality in weekly earnings was largely driven by rising hourly earnings for women, with the ratio of hours of work remaining roughly constant.

What lies ahead?

- It is important not just to understand the factors driving differences in remuneration, but also those that determine differences in total hours of work.
- Policy must look to removing barriers that limit the hours of work available to women.
- From mandating creches and generous maternity leaves to more comprehensive transformations in social norms that do not place the entire burden of child care and domestic work on women is the need of the hour.



11.2 Household Debt Challenge

Why in news?

According to the RBI, household debt surged to 5.8% of the GDP in 2023, marking the second-highest annual increase since Independence.

What is Household debt?

- Household debt is defined as all liabilities of households (including non-profit institutions serving households) that require payments of interest or principal by households to the creditors at a fixed dates in the future.
- In India, it comprises of consumer durables, house loans and personal loans for education, medical etc.,

Status of Household Debt in India

- In terms of stock of financial liabilities, household debt remained elevated at 37.6% of GDP in FY23, as against 36.9% in FY22.
- Banking system accounts for more than four-fifths of household debt in India
- Housing finance companies (HFCs) and other non-banking finance companies (NBFCs) account for approximately 10 % each
- Estimates suggest that the Debt Service ratio (DSR) of Indian households was approximately 12% in FY23.

How to assess the debt sustainability?

- Debt service ratio (DSR)**- It measures the proportion of the household disposable income required to meet debt obligations.
- This ratio provides insights into the ability of the household sector to service current and future debt obligations given their level of disposable income.
- A lower DSR indicates better sustainability and a more manageable level of household debt.
- Factors affecting DSR**- Debt-to-income ratio, residual maturity/tenure, and effective interest rate.

Debt to Income Ratio

- It compares a borrowers' total monthly debt payments to their total monthly income. It is used to assess a borrower's creditworthiness.
- Debt to Income Ratio = $\frac{\text{Total Monthly Debt}}{\text{Gross Monthly Income}}$

Residential maturity

- It is the tenure on which the installment loan must be paid by the borrower in full.

Effective Interest Rate

- It is the rate on which the actual return on investment and rate of interest on loan is calculated, considering compounding over a period. It offers the exact estimate of the amount the borrowers are laible to pay as interest.
- Effective Interest Rate = $(1 + i/n)^n - 1$. Here i is the annual interest rate and n is the number of compounding periods per year.

How does India's household debt affect Indian economy?

- Lack of data**- The Bank of International Settlements (BIS) publishes quarterly data on household DSR for 17 advanced economies, but not on any developing country including India.
- International scenario**- Indian household DSR is similar to that of heavily indebted Nordic countries and it is more than China, France, UK, USA, all which have household leverage of more than 100%.
- Short term impact**- An increase in household debt can boost economic growth and employment, as households borrow more to spend on consumption and investment.
- This can stimulate aggregate demand and output in the economy.
- Long term impact**- It can have negative effects on the economy as households may face difficulties in repaying their debts, especially if interest rates rise or income falls.
- This can reduce their consumption and savings, and increase their financial stress and default risk.
- External shocks**- High level of household debt make the economy vulnerable to external shocks, such as changes in global financial conditions, exchange rates, or commodity prices.

At the current pace of growth in debt and income, Indian households would reach the threshold level over the next 5 to 6 years.

- **Increase inequality**- If a household debt is concentrated among low-income or informal sector workers, who have less access to formal credit and social protection, they may bear a disproportionate burden of debt repayment and financial distress.

How to reduce the debt burden of household?

- **Increase residual maturity profile**- Increasing the residual maturity profile of borrowers by 6 months can push the threshold of household leverage by more than 4% points of income.
- **Reduce effective interest rate**- A reduction in the effective interest rate raises the sustainable level of household debt.

What lies ahead?

- Providing adequate relief and support to households affected by the pandemic, such as moratoriums, restructuring, waivers, subsidies, etc.
- Enhancing financial literacy and awareness among households about the benefits and risks of borrowing and saving.
- Promoting financial inclusion and access to formal credit for low-income and informal sector households.
- Encouraging responsible lending and borrowing practices among lenders and borrowers, such as prudential norms, credit ratings, transparency, etc.
- Maintaining macroeconomic stability and growth by pursuing sound fiscal and monetary policies.

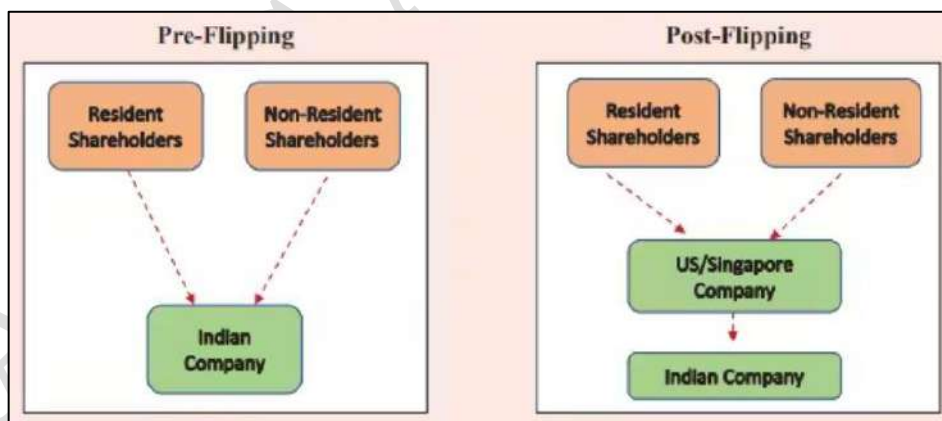
11.3 Reverse Flipping

Why in news?

Economic Survey 2023-24 acknowledged the concept of reverse flipping and this trend has been gaining attention in the recent years.

What is reverse flipping?

- **Flipping**- The process of transferring the entire ownership of an Indian company to an overseas entity, accompanied by a transfer of intellectual property rights and data owned by the Indian company.
- It transforms an Indian company into a 100% subsidiary of a foreign entity, with the founders and investors retaining the same ownership via the foreign entity, having swapped all shares.
- The Foreign Exchange Management (Overseas Investment) Rules and Regulations, 2022 clarify that the flipping culture has been acknowledged by the Reserve Bank of India (RBI).
- **Reasons for flipping**
 - Taxation benefits
 - Ease of setting up in places like Singapore, the US
 - Ease of attracting foreign capital
- **Reverse flipping** - It is the trend of overseas start-ups shifting their domicile to India and listing on Indian stock exchanges.
- **Reasons for reverse flipping to India**
 - India's favourable economic policies (tax breaks, funding assistance)
 - Expanding domestic market
 - Growing investor confidence in the country's start-up ecosystem



- Institutional support (International Financial Services Centres Authority (IFSCA) has constituted an expert committee to formulate a roadmap to 'Onshore the Indian innovation to GIFT IFSC')

International Financial Services Centre Authority (IFSCA)

- A unified authority for development and regulation of financial products, financial services and financial institutions in the International Financial Services Centre (IFSC) in India.
- **Established under** - International Financial Services Centres Authority Act, 2019.
- **Year-** 2020
- **Headquarters-** GIFT City, Gandhinagar in Gujarat.
- **Objective-** To develop a strong global connect and focus on the needs of the Indian economy as well as to serve as an international financial platform for the entire region and the global economy
- IFSCA plans to make GIFT City, India's first IFSC, the preferred location for start-ups for reverse flipping.

How significant is the reverse flipping scenario for India?

- **Start-up hub-** Reverse flipping underscores the belief in India's potential as a global start-up hub.
- **Ease of doing business-** Reverse flipping is due to access to deeper pools of venture capital, favourable tax regimes, better intellectual property protection and favourable government policies.
- **India's economic growth-** India is the world's 5th largest economy by GDP and is expected to become the 3rd largest economy by 2030.
- This presents a significant opportunity for overseas start-ups looking to expand into new market.
- **Skill capital-** As per ILO, India has the world's largest youth population with 66% of the population under the age of 35 making India an attractive market for a skilled and talented workforce.
- **Effective corporate governance-** The listing process on the Indian stock exchange is relatively cost-effective making it an attractive option for overseas start-ups with limited sources.
- **Consumerism-** The overseas start-ups can tap into growing Indian consumer market as they have brand recognition and goodwill in India, a competitive advantage over Indian start-ups.
- **Expansion-** Overseas start-ups can find synergies with Indian companies leading to partnerships, joint ventures, and acquisitions which help them to expand their reach in India.

How to accelerate the reverse flipping?

The Economic Survey 2023-24 has suggested the following measures.

- Simplifying multiple layers of tax and uncertainty due to tax litigation
- Simplifying procedures for capital flows
 - Many countries such as US and Singapore, have easier corporate laws with lesser restrictions on the inflow and outflow of capital
- Facilitating improved partnerships with private entities to develop best practices and state-of-the-art start-up mentorship platforms
- Exploring the incubation and funding landscape for start-ups in emerging fields like social innovation and impact investment

11.4 Digital Empowerment of Rural MSMEs

Why in news?

MSMEs, the economic fabric of India, needs digital empowerment which would help expand the market reach and also make access to easy finance.

Status of MSME in India

- Micro Small and Medium Enterprises (MSMEs) serve as the 'backbone of Indian economy' and the 'growth engines of the country'.

- **Classification-** MSMEs are classified based on the investment in plant & machinery/equipment and annual turnover.
- It includes both manufacturing service rendering enterprises.

Classification	Micro	Small	Medium
Investment in plant & machinery	Not more than Rs.1 crore	Not more than Rs.10 crore	Not more than Rs.50 crore
Annual turnover	Not more than Rs. 5 crore	Not more than Rs. 50 crore	Not more than Rs. 250 crore

Significance

- Contributes ~ 30% to India's GDP
- Employs ~ 11 crore people
- Constitutes ~ 40% of total exports
- More than half of them located in rural India

What are the advantages of digitalisation in MSMEs?

- **Accessibility-** It will ensure expansion of the geographical reach of MSMEs even in remote areas, and it will be able to acquire new customers.
- MSMEs can manage their customer base effectively and ensure better engagement with them.
- **Women empowerment-** Digitalisation will offer easy access to the international market for even women-owned enterprises.
- **Revenue generation-** Internet can be used to source raw materials and manage inventory.
- Digitalization also increases revenue growth, estimated to be 27% higher than that of their offline competitors.
- **Risk mitigation-** It helps MSMEs monitor and set customer credit limits which serve as a risk-reduction strategy, control credit loss, and support the maintenance of productive cash flow in the company.
- **Time efficiency-** It saves time from paperwork for the availability of funds.
- Real-time operations-oriented funding takes place by going digital, giving MSMEs the required confidence and resources.
- **Inclusive growth-** It can foster inclusive economic growth and resilience by increasing revenue and managing the operations.
- **Operational efficiency-** Artificial intelligence and machine learning can help MSMEs to improve their operations, customer-centricity, and creditworthiness.
- MSMEs need to adopt advanced digital technologies to join the Industry 4.0 revolution and boost their growth and competitiveness.

What are the challenges in digitalisation of MSMEs?

- **Digital illiteracy-** MSMEs may lack the awareness and skills to adopt and use digital technologies effectively, thus hampering the adoption of digitalisation.
- **Cybersecurity risks-** MSMEs will rely on digital assets like intellectual property, emails and employee data. Loss of this data in form of theft or leakage will affect the business continuity.
- **Digital divide-** A majority of MSME units in rural areas, run by women, SC-ST and other marginalised groups, do not have access to basic digital tools.
- **Privacy concerns-** As MSMEs move their operations online, they become potential targets for cyber threats.
- Protecting sensitive data and maintaining privacy becomes a significant challenge.
- **Asymmetric Market Power** - Large tech companies dominate the digital space, making it difficult for MSMEs to compete.
- **Technology adoption-** MSMEs often find it challenging to focus on long-term digital transformation while dealing with immediate business needs.

Steps taken to promote Digitalisation

- **Digital India**- In 2015, it was launched to improve online infrastructure and increase internet accessibility among citizens.
- **Unified Payment Interface**-It is a system that powers multiple bank accounts into a single mobile application, merging several banking features, seamless fund routing & merchant payments into one hood.
- **Bhasini**- It is an AI powered language translation platform which will support digital inclusion in India's diverse languages.
- **Udyam portal**- It provides registration of MSMEs at zero cost, the process is fully paperless, online and based on self-declaration.
- **PM-WANI**- PM-Wi-Fi Access Network Interface was launched by the Department of Telecommunication (DoT) in 2020 to provide ubiquitous and affordable internet connectivity.
- **GeM**- Government-e-Marketplace is a paperless, contactless, cashless and 100% government owned online marketplace.
- **Internet Saathi Program** –It was launched in 2015 by Google India and Tata Trusts to facilitate digital literacy among rural Indian women.
- **PM Gramin Digital Saksharta Abhiyan**- It was launched in 2017 to usher in digital literacy in rural India by covering 60 million households.

What lies ahead?

- Digital literacy plays a crucial role in catalyzing the uptake of digital technologies and addressing skill gaps.
- MSMEs need to build their skills and embrace technology including the use of social media and other online channels for business communication.
- The government may provide access to subsidized credit for MSMEs to digitize.
- MSMEs require more promising access to e-platforms, better payment and delivery services, simplified customs procedures, a vigorous data privacy system, and well-targeted talent building to ensure that they prosper from e-commerce.

11.5 Debate on 70 Hour Work Week

Why in news?

Recently Infosys founder N.R. Narayana Murthy sparked a debate, urging young Indians to work 70 hours per week.

Status of Working Hours in India

- As per *Time Use Survey 2019*, urban Indians aged 15-29, work 8.5 hours a day on average, with Uttarakhand ranking first at 9.6 hours a day. Rural Indians work 7.2 hours a day on average.
- **Factories Act 1948**- Every adult (a person who has completed 18 years of age) cannot work for more than 48 hours a week and not more than 9 hours in a day.
- Any employee who works for more than this period is eligible for overtime remuneration prescribed as twice the amount of ordinary wages.
- **Mines Act 1952**- No person in a mine is required to work for more than 10 hours in any day, inclusive of overtime.
- **Minimum Wages Act 1948**- Wages paid for overtime must be double the actual rate for any hour, or part of an hour, of actual work undertaken in excess of the prescribed 9 hours or 48 hours per week.
- **New labour code**- Weekly and daily working hours are capped at 48 hours and 12 hours, respectively.
- **State's Shops and Establishment Act** - Every State in India has its own overtime rules and policy set out in this Act.

What are the arguments in favour of 70 hour work week?

- **Economic productivity**- A long work week boost economic productivity, leads to employment opportunities and overall economic growth.
- **Worker efficiency**- It will increase the productivity and efficiency of the Indian workforce, which is currently one of the lowest in the world.
- This would meet market demands, generate profit in a competitive global market.
- **Developed country**- It is necessary for India to become a developed country and uplift the living standards of its people.
- **Skill acquisition**- It will enable young Indians to learn new skills, acquire more knowledge, and innovate more solutions for the country's problems.
- **Success stories**- It will help India emulate the success stories of Japan and Germany, which worked hard and long hours to rebuild their nations after the Second World War.



What are the arguments against the 70-hour work week?

- **One size does not fit all**- 89% of the Indian workforce is engaged in informal employment, compared to just 4.2% in Germany and 8% in Japan.
- Hence comparing these countries with India in labour productivity is not viable.
- **Exploitation**- A prolonged work week can lead to the exploitation of the working class and deprives their rights and benefits.
- **Health impacts** - It can negatively impact mental and physical health, resulting in stress, burnout, fatigue, sleep deprivation and other health problems.
- **Work-life balance**- As per ILO, companies that implement work-life balance policies benefit from increased retention of current employees, improved recruitment, lower rates of absenteeism and higher productivity.
- **Counterproductive**- It can reduce quality and efficiency of the work output, increase the chances of errors and accidents, lowers the morale and motivation of the workers.
- **Economic inequality**- Rich benefit from long work hours of working class which may widen the inequality between working class and rich.
- **Productivity**- Productivity is an attribute of skill, not time, and that reducing working hours can improve leisure and quality of life without reducing output value.
- Working more than eight hours a day also leads to lower hourly output.
 - **Belgium** has given the workers the right to work four days a week without a salary reduction to create a more dynamic and productive economy.
- **Outdated**- 70-hour work week is outdated as it does not suit the changing needs and preferences of the modern workforce, which values flexibility, autonomy and work-life balance.
- **Lacks funding**- Worker productivity depends on the amount of capital and the quality of institutions that support investment and innovation, hence just increasing working hours will have no impact on productivity.
- **Labour productivity**- India's average annual working hours stayed above 2,000 from 1970 to 2020, while the labour productivity increased marginally from 2 dollars per hour to 9 dollars in the same period.
- Hence the need of the hour is to increase productivity through technology rather increasing working hours.

11.6 Cyprus Confidential

Why in news?

An investigation titled 'Cyprus Confidential' has shed light on the intricate web of tax avoidance and wealth concealment.

What is Cyprus Confidential?

- It is a global offshore investigation of 3.6 million documents that reveal how the rich and powerful from around the world use Cyprus as a tax haven and a secrecy jurisdiction.
- **Partnership**- International Consortium of Investigative Journalists and 68 media partners.
- **Cyprus**- It is a small Mediterranean island off the coast of Turkey that has an outsized financial sector.

- It has some of the European Union's most lax financial disclosure laws, making the country an ideal destination for stashing wealth.
- **Cyprus Investment Programme-** It is a golden passport scheme launched by Cyprus in 2007.
- It enabled financially prominent individuals to obtain Cypriot citizenship, thereby attracting foreign direct investments into the country.
- **India's connection-** The investigation shows how some Indian investors and businesses set up entities in Cyprus to take advantage of the low tax rates, the double taxation avoidance agreement, and the anonymity of the beneficial owners.



Tax Haven

- It is a country or jurisdiction that offers low or no tax liability to foreign individuals and businesses who deposit their money or operate their activities there.
- It is an offshore financial center that may also have secrecy laws that prevent the disclosure of information to foreign tax authorities.
- **Example-** Cayman Islands, Luxemburg, Panama Islands, Mauritius etc.,
- Tax havens may be used for various purposes, such as tax avoidance, tax evasion, money laundering, or hiding assets from creditors
- **Criteria for a tax haven country-** It was set by Organization for Economic Cooperation and Development (OECD) in 1988.
 - Nil or nominal tax on the relevant income
 - No effective exchange of information
 - Non-transparent
 - No substantial activities occur
- **Corporate Tax Haven Index-** It is launched by Tax Justice Network that tracks the most complicit jurisdictions in helping multinational corporations evade taxes.
 - As of 2021, the worst offenders were the British Virgin Islands, the Cayman Islands, and Bermuda.
- **Offshore trusts-** As per Cyprus International Trust Law, they are trusts whose property and income are outside Cyprus, and even the settlor and beneficiaries are not permanent residents of Cyprus.
- It allows businesspersons to avoid tax that would have otherwise been paid by the settlor had she/ he remitted the income arising from overseas operations, to the country of residence.

How India is connected to Cyprus Confidential?

- **India investigation** -It reveals how entities with offshore residency in Cyprus were controlled from India, and instructions for financial transactions in these entities are given by individuals in India.
- **Offshore entities in Cyprus-** It is not illegal to set up an offshore company in Cyprus as India has Double-Taxation Avoidance Agreement (DTAA) with Cyprus.
- Companies use their tax residency certificates in such countries to enjoy tax benefits that are available legally.
- **India's tax treaty with Cyprus-**

Prior to 2013	Since 2013	Since 2016
<ul style="list-style-type: none"> • Both had a treaty offering investors exemption from capital gains tax at the time of exit. • Cyprus too didn't tax capital gains. 	<ul style="list-style-type: none"> • India categorised Cyprus under Notified Jurisdictional Area (NJA) under Income Tax Act. • NJA countries face consequences of higher withholding tax rate of 30% for payments received by entities registered there. 	<ul style="list-style-type: none"> • India signed revised DTAA in 2016. • It provides source based taxation of capital gains arising from alienation of shares (voluntary sale/transfer of asset by owner).

- DTAA does not stop the Income Tax department from denying tax treaty benefits if it is established that a company has been inserted as the owner of shares in India at the time of disposal of the shares to a third party, solely with a view to avoid tax.

DTAA is a tax treaty signed between any two/multiple countries so that taxpayers can avoid paying double taxes on their income earned from the source country as well as the residence country.

At present, India has double tax avoidance treaties with more than 80 countries around the world.

What advantages does Cyprus offer India?

- Tax exemption-** Offshore companies and offshore branches managed and controlled from Cyprus are taxed at 4.25%, and offshore branches managed and controlled from abroad and offshore partnerships are totally exempt from tax.
- No estate duty-** Capital gains tax is payable on the sale or transfer of shares in an offshore entity but no estate duty is payable on the inheritance of shares in an offshore company.
- No import duty-** There is no import duty on the purchase of cars, office or household equipment for foreign employees.
- It also assures anonymity of the beneficial owners of offshore entities.
- Tax planning-** DTAA allows Cyprus which has a low tax regime to be used as a jurisdiction for tax planning.
- Alternative to Mauritius-** Dividends paid out from India will be subject to withholding tax, no taxation will arise in Cyprus as this will be adjusted or credited against the 4.25% tax in Cyprus

Offshore Investigations	Year
HSBC Swiss Leaks	2015
Panama Papers	2016
Paradise Papers	2017
Pandora Papers	2021

11.7 Issues in Sovereign Gold Bond

Why in news?

People prefer physical gold over sovereign gold bonds as no trail is left for the tax authorities.

What is Sovereign Gold Bond (SGB)?

- About** - A financial instrument introduced by government to reduce gold imports
- Launch year** - 2016
- Issuer** - Reserve Bank of India (RBI) on behalf of Government of India
- Interest** - 2.5% paid semi-annually
- Eligible investor**
 - Persons residing in India as defined under Foreign Exchange Management Act, 1999
 - Individuals, Hindu Undivided Families (HUFs), Trusts, Universities and Charitable institutions
- Investment limit**
 - Minimum investment- 1 gram
 - Maximum investment
 - Individuals & HUFs - 4 kg
 - Trusts - 20 kg

Key terms

Physical gold

- It can be purchased at jewelry shops.
- It includes a 20% making charge, 3% GST, and capital gains tax is charged when selling the yellow metal.

Digital gold

- It is alternative to physical gold where purity is guaranteed.
- Example- Investment in exchange traded funds (ETFs), gold mutual funds, and gold futures.

Gold ETFs

- They are gold-based passive investment instruments that invest in gold bullion and are based on gold prices.
- They are paper or dematerialized units that represent physical gold.

- **Authorized agencies to sell SGBs**

- Nationalised Banks
- Scheduled Private Banks
- Scheduled Foreign Banks
- Designated Post Offices
- Stock Holding Corporation of India Ltd.,
- Authorised stock exchanges

- **Tenure** - 8 years with exit option after the 5th year

What are the advantages of SGB?

- **Protected investment**- The quantity of gold the investor pays for is protected, since he receives the ongoing market price at the time of redemption/premature redemption.
- **Cost effective**- These bonds offer a superior alternative to physical gold as the risks and costs of storage are eliminated.
- **Passive income**- Investors are assured of the market value at the time of maturity, and periodical interest.
- **Flexibility**- These bonds are free from issues like jewellery making charges, purity, risk of loss of scrip, etc.,
- **Collateral**- It is as liquid as physical gold and could be exchanged for money at the time of financial needs.
- **Tax benefits**- There is a provision of tax exemption from the interest and capital gains of the bond.
- **Minimal risk**- Gold bonds have a negligible risk factor, making them an ideal investment choice.

What makes physical gold more attractive than SGB for people?

- **Lower returns**- SGB are risk free instruments but they provide low returns when compared to other market instruments.
- **Liquidity restriction**- SGBs are long-term investments that cannot be liquidated before 5 years from the date of investment whereas physical gold can be sold at anytime and anywhere.
- **Investment limit**- Imposing maximum limit restricts the people their freedom of choice to invest.
- **Market fluctuation**- It shifts the price of gold below the bond cost price.
- **Low demand**- The demand for SGB is very low compared to physical gold imports.
 - Only 1.8% of total gold imports were equivalent to SGBs in the last 8 years.
- **Tangible asset**- Confidentiality and privacy is not possible in SGB where the KYC (Know Your Customer) norms are applied and followed as they are issued by RBI through banks.
- **Cultural value**- Physical gold holds emotional significance in India, especially for weddings and festivals. It is also seen as a symbol of status and wealth.
- **Dependence**- SGB carries the risk of default or fluctuation due to government guarantee unlike the physical gold.

Comparison among ETFs, Sovereign Gold Bond and Physical Gold			
	Gold ETFs	Sovereign Gold Bond	Physical Gold
Investment cap	No cap	Investment cap of 4kg in a financial year per person, 20kg for Trust	No cap
On tap	Can be bought & sold on BSE, NSE during market hours	Can be purchased in tranche for limited period; also available on BSE, NSE	Can be purchased through jewellers
Purity of gold	0.995 purity	NA	Purity of gold is questionable
Price	Trades real-time, tracks domestic price of gold	Fixed on basis of previous week average	Dependent on jeweller
Secondary market	Decent liquidity, trades close to fair price	Low liquidity, trades away from fair value, usually at a discount	Can be sold back to most jewellers, usually at a substantial discount
Interest rate	Nil	2.5% per annum	Nil
Tax on interest	NA	Slab Rate	NA
Storage charges	Nil	Nil	Locker charges to be incurred every year
STCG	Slab rate	Slab rate	Slab rate
LTCG	After 3 years 20% with indexation	After 3 Years but before maturity 20% with indexation; tax exempt on redemption	After 3 years 20% with indexation

Electronic Gold Receipts

- They are a new way of trading gold on the stock exchange without having to buy or store physical gold.
- **Aim-** To provide transparent and efficient price discovery of gold.
- **Regulation-** Securities and Exchange Board of India (SEBI)
- They are held in demat accounts and traded in stock exchanges like dematerialised stocks.
- The stock exchange can source physical gold from deposits in delivery centres, domestic refineries and imports.

11.8 Boost India's Capital Goods Sector

Why in news?

India has the opportunity to create national champions in the capital goods sector.

Picture of Capital Goods Sector in India

- **Capital Goods** - It is a category of stocks related to the manufacture or distribution of goods.
- It includes companies that produce machinery, electrical equipment, aerospace and defence, engineering, and construction projects.
- **Status** - The current value is at US 70 billion dollars, contributing about 2% to the country's GDP. It is likely to cross US 100 billion dollars by 2025, in line with the growth of the Indian manufacturing sector.
- It contributes 12% to the overall manufacturing in India.
- It employs 1.4 million people.

What are the challenges present in capital goods sector?

- **Financial crunch-** India invests only 0.7% of GDP compared to 2.5% of the developed world, which affects the competitiveness and productivity of Indian industry.
- **Poor skillset-** There is a mismatch between the jobs and the people, which is counter to the demographic dividend that India currently holds.
- **Inverted duty structure-** The import duty on raw materials and components is higher than the import duty on finished products, making domestic production uncompetitive and discouraging value addition.
- **High export transaction costs-** It includes costs related to transportation, logistics, documentation, certification and compliance, which increases the time and money required to export capital goods from India.
- **Lack of strong institutional mechanisms** - There is a lack of adequate and timely financing, insurance and marketing support for exporters of capital goods, especially for MSMEs.
- **Poor demand-** The traditional markets for Indian capital goods, such as the US and Europe, have been experiencing low growth and reduced investment, affecting the export prospects of the sector.
- **Slowdown in domestic demand-** This is due to policy uncertainty, regulatory hurdles, land acquisition issues, environmental clearance delays, and infrastructure bottlenecks, etc.
- **Lack of private players-** Private sector accounts for 75% of total investment in capital goods, but there is slowdown in private investments due to low-capacity utilization, high debt, and low profitability.
- **Lack of awareness-** MSMEs and SMEs form large part of capital goods but they are not aware of international standards and norms required to export their products.

Steps taken to promote Capital Goods Sector

- **National Capital Goods Policy-** It was launched in 2016 to promote the development of capital goods sector.
- **Production Linked Incentive-** It was launched to provide incentives on incremental sales from products manufactured in domestic units.

- **National Infrastructure Pipeline-** It is a long-term plan to invest over 1.4 trillion dollars in various infrastructure sectors such as energy, transport, water, digital, and social by 2025.
- **National Logistics Policy-** It was proposed to reduce the cost of logistics to 10% of GDP from the current 13-14%.
- **PM Gati Shakti-** It is the national master plan for multi-modal connectivity to economic zones and aims to bring 16 ministries together for integrated planning and coordinated implementation of infrastructure projects.
- **Samarth Udyog scheme-** It promotes digital transformation and Industry 4.0 in Capital Goods sector.

What are the ways to improve the capital goods sector?

- **Foster innovation-** Investment in research will form the foundation for success of industrial development.
- **Policy support-** *The Scheme for Enhancement of Competitiveness of the Capital Goods sector* should be scaled up as it is nurturing collaboration between industry and academia with remarkable results.
- **Infrastructure support-** Building a strong logistics and port infrastructure would reduce the cost associated with transportation.
- **Skill development-** There is a need to skill and reskill the workforce to meet the changing demands of the industry.
- **Promote environment sustainability-** India should be a responsible and sustainable player in the global trade and prioritise products with a low carbon footprint.
- **Access to testing facilities-** India should ensure access to facilities for product testing, performance evaluation, and certification, especially for MSMEs.
- **Impetus to Industry 4.0-** It emphasises the integration of digital technology into manufacturing processes which will not only improve efficiency, but also enhance the capital goods sector's capacity for innovation and adaption to changing market demands.
- **Trade facilitation-** Tariff rationalisation, trade agreements and diplomatic efforts will have to go hand-in-hand.
- **Global collaborations-** India can learn from joint ventures, technology transfers and collaborative research with other countries until it develops its own capabilities for "Creating in India".

What lies ahead?

- The cascading effects of having a booming capital goods industry will help provide insulation from the uncertainties of the world and truly transform India's aspirations from 'Make in India to Make for the World'.
- With the momentous task of transforming India into the 'Factory of the world' and to reach a production size of 112 billion dollars by 2025, a concerted approach is the way forward
- There is a need to boost manufacturing and capital goods sector to achieve the India's vision for 2047 as a developed nation.

12. ENVIRONMENT

12.1 Rapid Ice Melt in West Antarctica

Why in news?

A new study has pointed out that rapid melting of West Antarctica's ice sheet due to warm waters around it, is now unavoidable, no matter how much carbon emissions are cut.

What is an ice sheet?

- **Ice sheet** - An ice sheet is essentially a mass of glacial ice that covers more than 50,000 square kilometres of land.
- Ice sheets contain about 99% of the fresh water on Earth, and are sometimes called continental glaciers.
- Major ice sheets include
 - **Antarctica ice sheet-** World's largest volume of land-based ice

○ Greenland ice sheet

- **Ice shelf**- As ice sheets extend to the coast and over the ocean, they become ice shelves.
- **Ice cap**- A mass of glacial ice covering less area than an ice sheet is called an ice cap.
- **Ice field**- A series of connected ice caps is called an ice field.
- **Individual glaciers**- They make up the ice fields, ice caps, and eventually ice sheets.
- **Sea ice** – It is the free-floating ice that surrounds the polar regions created by sea water freezing.

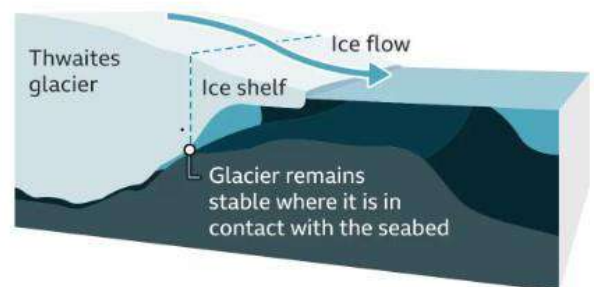
The study, 'Unavoidable future increase in West Antarctic ice-shelf melting over the twenty-first century', quoted the reasons for the rapid ice melt in West Antarctica.

What is the recent study about?

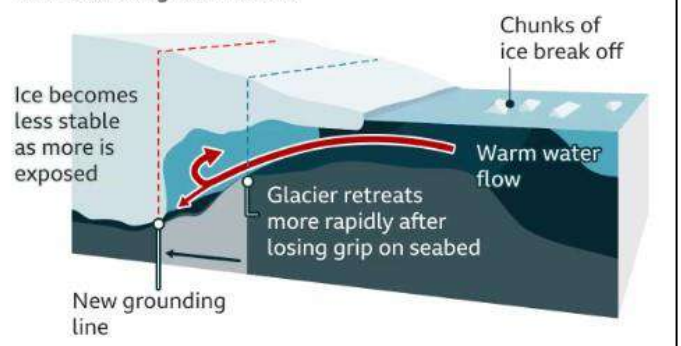
- The scientists have used a high-resolution computer model of the **Amundsen Sea**, the most vulnerable sector of the ice sheet, to provide comprehensive assessment of warming in West Antarctica.
- **Findings** - Amundsen Sea will warm roughly 3 times faster than the historical rate through the rest of this century leading to much more rapid melting of ice shelves.
- The study worsens the outlook for **Thwaites Glacier** that is rapidly melting beneath its connected ice shelf.
- The processes triggered by faster ice shelf melting could lead to the collapse of the West Antarctic Ice Sheet.
- If lost completely, the ice sheet would raise the global mean sea level by 5.3 metres or 17.4 feet, a devastating consequence for people living in coastal cities across the world, including in India.



How Thwaites glacier is melting



Melting under the ice shelf by warmer water can accelerate the retreat of the glacier behind



How the West Antarctic ice sheet is melting?

- **Ocean currents** - Strengthening of ocean currents drives more warm water from the deep ocean towards the shallower ice shelves along the coast.
- **Thinning of ice shelf**- If an ice shelf thins or disappears, these glaciers tend to speed up, discharging more ice into the ocean and causing sea level rise.
- The region's ice shelves have been depleting, glaciers have been flowing faster towards the ocean and the ice sheet has been shrinking.
- Thwaites glacier is referred as the "**doomsday glacier**" because it would raise global sea-levels by around 65cm if it collapses entirely.

The Antarctic ice sheet contains enough ice to raise global sea-levels by about 58m (190ft) if it melted entirely. Of this, a sizeable portion enough to raise sea-levels by around 5m (16ft), is held in West Antarctica.

12.2 UN Report on Groundwater Depletion

Why in news?

Interconnected Disaster Risk Report 2023, released by the academic arm of United Nations, reveals that 21 of the 37 world's aquifers are depleting faster than they can be replenished.

What does the report reveal about the groundwater crisis?

- **Groundwater** – It is an essential freshwater resource stored in underground reservoirs called “aquifers”.
- Groundwater depletion can be defined as the prolonged withdrawal of groundwater from an aquifer in quantities exceeding average annual replenishment, leading to a persistent decline in groundwater levels and volumes.
- **Findings** - Over 2 billion people rely on groundwater as an essential supply of drinking water.
- The regions where groundwater depletion is most severe include parts of India, north-eastern China, western US, Mexico, Iran, Saudi Arabia and parts of Northern Africa.

Around 30% of the world's fresh water is stored as groundwater.

India pumps up the most groundwater globally,

mainly for irrigation, domestic and industrial uses.

Some areas in the Indo-Gangetic basin region have already passed the groundwater depletion tipping point.

In Punjab and Haryana, groundwater exploitation is reported with 78% of wells in Punjab are overexploited and the region will face critically low groundwater availability in 2025.

70% of groundwater withdrawals are used for agricultural purpose.

As per the report, agricultural intensification is a major factor pushing us towards groundwater depletion risk.

To know about India's groundwater governance click [here](#)

What are the causes of groundwater depletion?

- **Agricultural intensification**- Groundwater has been used extensively in arid regions like Saudi Arabia, India (Punjab) to grow crops such as wheat and rice, leading to depletion of aquifers.
- **Lack of planning**- Groundwater is a limited and essential resource, but poor management of river systems and groundwater resources leads to overreliance, depletion and exploitation.
- **Lack of data**- Absence of data favours the practice of over extraction since it makes sustainable water management efforts more difficult to develop and monitor.
- **Policy paralysis** - There is a link between power subsidies and excessive groundwater extraction in some States.

Interconnected Disaster Risk Report

- **Launch year**- 2021
- **Launched by**- Institute for Environment and Human Security (UNU-EHS), the academic arm of UN
- **Headquarters** - Bonn, Germany
- **Objective**- To analyse and shed light on the interconnections of disasters with each other and with human actions.
- **2023 report**- The world is inching closer to **6 interconnected risk tipping points**.
- A risk tipping point is defined as the moment at which a given socio-ecological system is no longer able to buffer risks and provide its expected functions, after which the risk of catastrophic impacts to these systems increases substantially.



- **High Temperature**- Hot temperatures will reduce the moisture available for recharging aquifers, especially in hard rock regions, further aggravating the depletion.

What are the impacts of groundwater depletion?

- **Livelihood loss**- It reduces crop yields and affects farming livelihoods who depend on groundwater for irrigation.
- **Migration**- Groundwater depletion exacerbates water conflicts in arid regions, such as the [Sahel and Sahara](#), thereby causing migration or displacement.
- **Health issues**- Reduction in cooling effect of groundwater on land and atmosphere, and increase in humidity and wet-bulb temperatures in the air can increase the risk of unbearable heat-related illnesses.
- **Food and water insecurity**- It threatens food and water security for both exporting and importing countries that rely on groundwater for crop production.
- **Biodiversity loss**- It affects the survival of endemic species in aquifers and increase the likelihood of extinctions.
- **Effect on environment** - It also reduces river base flow and wetland health.

Steps taken to promote Groundwater Conservation

- **National Aquifer Mapping and Management Program**- Undertaken by Central Ground Water Board (CGWB) under Ground Water Management and Regulation scheme in order to delineate and characterize the aquifers and to prepare management plans.
- **National Water Policy** - It was implemented to govern the planning and development of water resources and their optimum utilization.
- **Master Plan for Artificial Recharge to Groundwater** - It has been prepared in 2020 with respective State counterparts which includes artificial recharge in both rural and urban areas.
- **Jal Shakti Ministry** - In 2019, Jal Shakti Ministry was created (a merger of Ministries of Water Resources, River Development and Ganga Rejuvenation with Drinking Water and Sanitation).
- **Jal Shakti Abhiyan** - It was launched in 2019 in water stressed blocks of 256 districts to harvest the monsoon rainfall through artificial recharge structures, watershed management, etc.,
- **Jal Shakti Abhiyan: Catch the Rain 2023**- It is targeting "Source sustainability for drinking water" for source strengthening/ source stabilization of rural drinking water supply schemes.
- **Atal Bhujal Yojana**- It was piloted in 2018 to recharge ground water and create sufficient water storage for agricultural purposes.
- **N-GRES** - A software, 'India-Groundwater Resource Estimation System (IN-GRES)', has been developed for ground water resources assessment.
- **Groundwater guidelines** - The comprehensive groundwater guidelines 2020 provided for regulation in various sectors making the processes of issuing a no-objection certificate transparent and time-bound.

What lies ahead?

- The need of the hour is to ensure transparency, foster public awareness and education, promoting less thirsty crops and efficient watering techniques.
- The report advocates for using technologies that can monitor the water level in borewells and tubewells.

12.3 Biosphere Reserves

Why in news?

It is important to reflect on the progress made in conserving and sustainably using the biosphere reserves.

What is a Biosphere Reserve?

- It is an international designation for representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof.
- BRs are living examples of how human beings and nature can co-exist while respecting each other's needs.

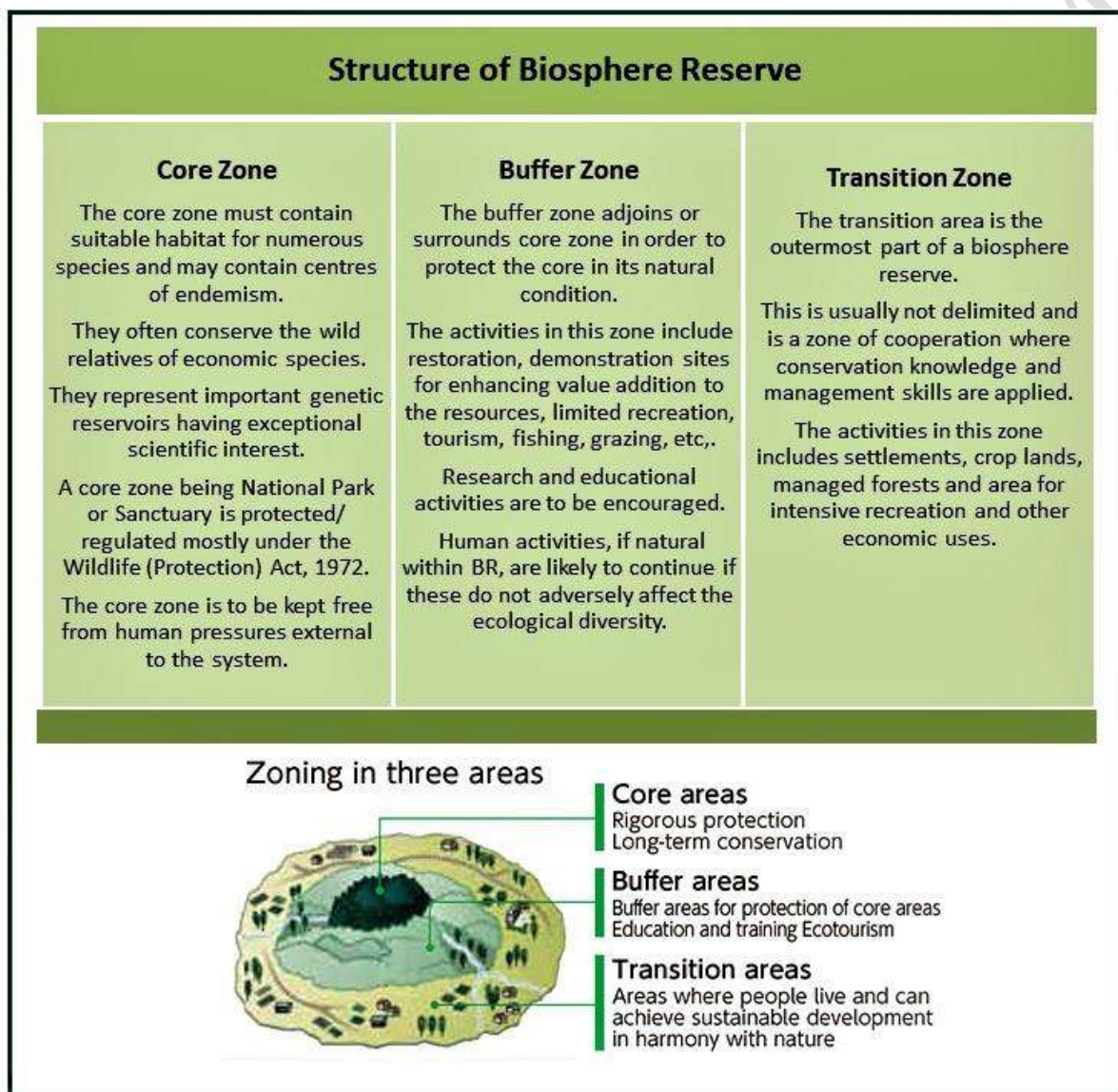
- **Designated by-** United Nations Educational, Scientific and Cultural Organization (UNESCO)
- **Supported by** - Other UN agencies and International Union for Conservation of Nature (IUCN)

- **Function**

- Conservation of biodiversity and cultural diversity
- Economic development that is socio culturally and environmentally sustainable
- Logistic support underpinning development through research, monitoring education and training

World Biosphere Reserve Day is celebrated on November 3 to raise awareness on the importance of biosphere reserves & to promote their conservation & sustainable use.

What is the criteria for designating biosphere reserves?



- The site must contain an effectively protected and minimally disturbed core area of value of nature conservation.
- The core area should be typical of a bio-geographical unit and large enough to sustain viable populations representing all trophic levels in the ecosystem.
- The management authority to ensure the cooperation of local communities while managing and containing the conflicts.
- Areas potential for preservation of traditional tribal or rural modes of living for harmonious use of environment.

What are World Network of Biosphere Reserves (WNBR)?

- The WNBR of the MAB Programme consists of a dynamic and interactive network of sites of excellence.
- **Launch year**-1971
- **Aim**- To establish a scientific basis for the improvement of relationships between people and their environments.
- **Role** - It proposes interdisciplinary research, demonstration and training in natural resources management.
- It helps national governments with the planning and implementation of research and training programmes with technical assistance and scientific advice.
- **Picture of WNBR**
 - **Leading WNBR country** - Spain, with 53 properties
 - **1st biosphere reserve in South Asia** - Hurulu Biosphere Reserve, Sri Lanka.
 - **No Biosphere Reserves** - Bangladesh, Bhutan, and Nepal
 - **India**- Signatory to the landscape approach supported by UNESCO's MAB programme

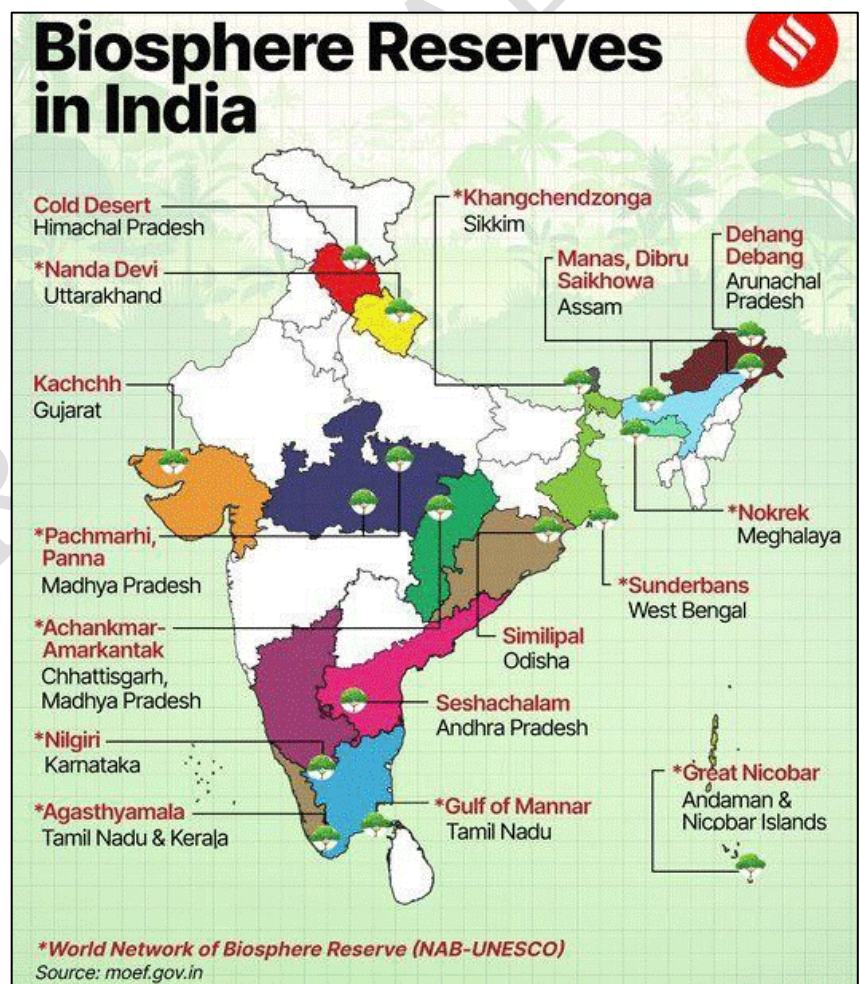
According to the UNESCO, there are currently 748 biosphere reserves across 134 countries, including 22 transboundary sites.

What is the status of biosphere reserves in India?

- **Status**- There are 18 biosphere reserves in India, out of which 12 are recognized internationally under the MAB programme.
- **UNESCO Michel Batisse Award 2023**- It is won by Gulf of Mannar for introducing the concept of 'plastic checkpoints'.
- **1st biosphere reserve** - Nilgiri Biosphere Reserve, Tamilnadu, Kerala, Karnataka
- **Largest Biosphere reserve** - Great Rann of Kutch, Gujarat
- **Smallest biosphere reserve** - Dibru- Saikhowa, Assam

How significant are biosphere reserves?

- **Testing sites**- They are sites for testing the approaches to manage changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity.
- **Restoration**- Any damaged ecosystems and habitats are repaired properly through the establishment of biosphere reserves.
- **Land use planning**- Various groups of people work together to find comprehensive land management solutions.
- **Community engagement**- In the Sundarbans Biosphere Reserve in India, local communities are working together to manage mangrove forests and protect the biodiversity of the region.
- **Conservation**- Preservation of species, ecosystems, genetic diversity, and landscapes without affecting the living beings that inhabit them.
- **Healthy Ecosystems**- Natural problems such as soil erosion, water springs, and soil quality should be monitored and protected on a regular basis.



- **Education and Research-** Information about conserving, restoring, and developing ecosystems is provided, as well as steps to recreate landscapes affected by human activities.
- **Provides habitat-** They are home to a wide variety of ecosystems from tropical rainforests to alpine deserts, and provide home to countless unique and endangered plants and animals species.
- **Carbon sink-** They have become crucial in our fight against climate change, as these areas are home to many of the world's carbon sinks helping to absorb carbon dioxide from the atmosphere.

South and Central Asian Biosphere Reserve Network Meeting (SACAM)

- In partnership with the Ministry of Environment, Forests and Climate Change and the National Centre for Sustainable Coastal Management, 10th SACAM was concluded in Chennai.
- **Theme-** "Ridge to Reef"
- **Role-** A platform for exchanging knowledge and fostering collaborations in the realm of sustainable environmental practices.

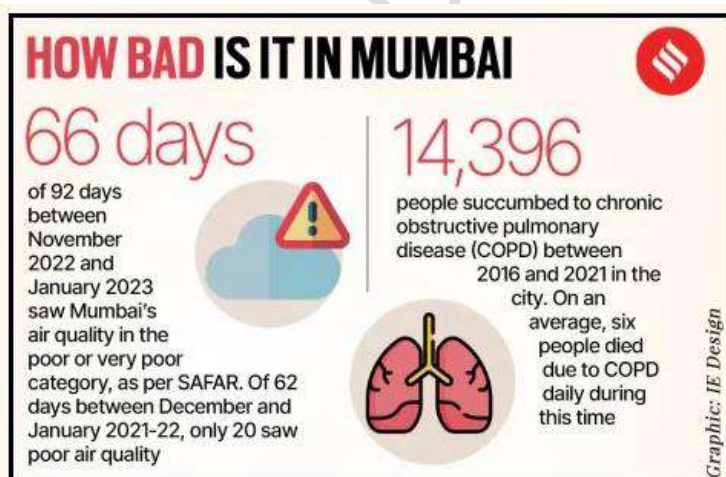
12.4 Poor Air Quality in Mumbai

Why in news?

Mumbai's air quality has deteriorated with the Air Quality Index (AQI) being above 200 (poor).

What is the condition of air pollution in Mumbai?

- **Sources-** Vehicular emissions, industrial activities, construction dust, waste burning, and biomass burning.
- *Open waste burning* is the top pollution source identified by the Mumbai Air Pollution Mitigation Plan.
- **Status** - The [AQI Index](#) indicates that the air pollution level in Mumbai is *unhealthy*.
- Particulate matter level raised 7 times above the recommended level of World Health Organisation (WHO).



Why air quality is deteriorating in Mumbai?

- **Climate change-** Increased warming in Middle East and Arabian Sea affects the wind patterns and the temperature, humidity, and rainfall over Mumbai and northwest India in all seasons.
- Increase in pre-monsoon heat waves and heavy rain spells during the summer monsoon in addition to the October heat and pollution caused the poor air quality in Mumbai.
- **Prolonged La Nina-** La Nina is a condition in which the sea surface temperatures in the eastern Pacific Ocean become cooler than normal.
- **2022** was part of the longest and strongest La Nina events on record that impacted the wind pattern of the city.
- **Temperature inversion-** The cooling of surface air and warming of upper air create a stable vertical variation in air temperature, which inhibits the mixing of air, making the air quality worse.
- **Lack of civic agencies support-** There was no biomethanation plants to process the waste and lack of segregation of wastes in slum clusters and non-gated societies contributed to the poor air quality.
- **Outdated regulations-** There was no significant increase in inspections and penalties for waste burning and the city's regulations remain unaltered for 17 years.
- **Coastal location-** Mumbai was considered largely immune to the issue of air pollution, and the associated problems of haze and smog due to its location near the coast.
- But the last 2 years have shown that this geographical advantage no longer offers reliable protection.

What are the consequences of poor air quality?

- **Health impact-** It can cause respiratory problems, cardiovascular diseases, cancer, and premature death. It can also affect the mental health and cognitive abilities of people.

- **Children-** High prevalence of particulate matter 2.5 is associated with low birth weight, anaemia, and acute respiratory infections among children.
- **Pregnancy outcomes-** High levels of air pollution leads to low birth weight (LBW), stillbirth, foetal mortality, premature birth, and birth defects.

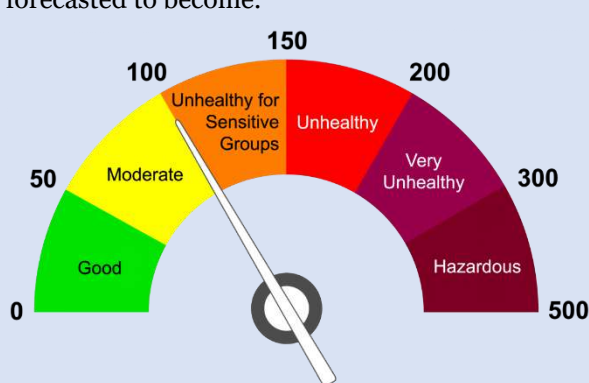
Mumbai has witnessed a gradual rise in lung cancer fatalities from 621 in 2009 to 923 in 2021, reflecting a 48.6% increase over 12 years

What measures were implemented for curbing Mumbai air pollution?

- The Brihanmumbai Municipal Corporation (BMC) issued a set of **guidelines** for the mitigation of air pollution in Mumbai and gave builders and contractors 1 month to acquire sprinklers and fogging machines at construction sites.
- The BMC has imposed a penalty of Rs 20,000 on vehicles like trucks found without proper tonneau covering, having dirty tyres, and spreading dust while carrying *construction debris*.
- Recycled water or water from local sources like lakes, ponds, wells and borewells is to be used for **road washing**.
- The BMC is also in the process of setting up a **command-and-control centre** to collect data using sensor-based air quality index monitoring devices.
- Many buses will be fitted with **vehicle-mounted filters** for removal of impurities from dust and other particles.
- The Maharashtra Pollution Control Board has issued notices to major companies in Mumbai to **reduce production by 50%** to control rising air pollution.

What lies ahead?

- The need of the hour is decentralised waste management and bio-methanation plants to process the wastes.
- Mumbai also needs a holistic waste management policy and strict penalties to tackle the pollution problem.
- Long term strategies such as implementing emission standards, promoting public transport, enhancing green cover would be the potential solution.

System of Air Quality and Weather Forecasting (SAFAR)	Air Quality Index (AQI)
<ul style="list-style-type: none"> • A dedicated Air Quality Information Service for Indian Metropolitan Cities to make India self-sufficient in providing frontier research based scientific accredited robust Air Quality Forecasting system. • Launched by- Ministry of Earth Sciences • Implementation- Indian Institute of Tropical Metrology, Pune and Indian Meteorological Department. • Aim- To provide location specific information on air quality in near real time and its forecast 1-3 days in advance for the first time in India. • Coverage- Delhi, Pune, Mumbai, Ahmedabad. 	<ul style="list-style-type: none"> • AQI is a number used to communicate to the public how polluted the air currently is or how polluted it is forecasted to become.  <p>The AQI gauge is a semi-circular scale from 0 to 500. It is divided into six color-coded zones: Good (0-50, green), Moderate (51-100, yellow), Unhealthy for Sensitive Groups (101-150, orange), Unhealthy (151-200, red), Very Unhealthy (201-300, purple), and Hazardous (301-500, dark red). A needle points to the boundary between the 'Unhealthy for Sensitive Groups' and 'Unhealthy' zones.</p>

12.5 Cleaning our Rivers

Why in news?

As many of the Indian rivers are reported to be polluted, it is essential to ramp up the conservation initiatives.

Data Point

- With 14 major river systems and more than 600 rivers, almost 80% of the subcontinent's population is dependent on these resources for their sustenance.

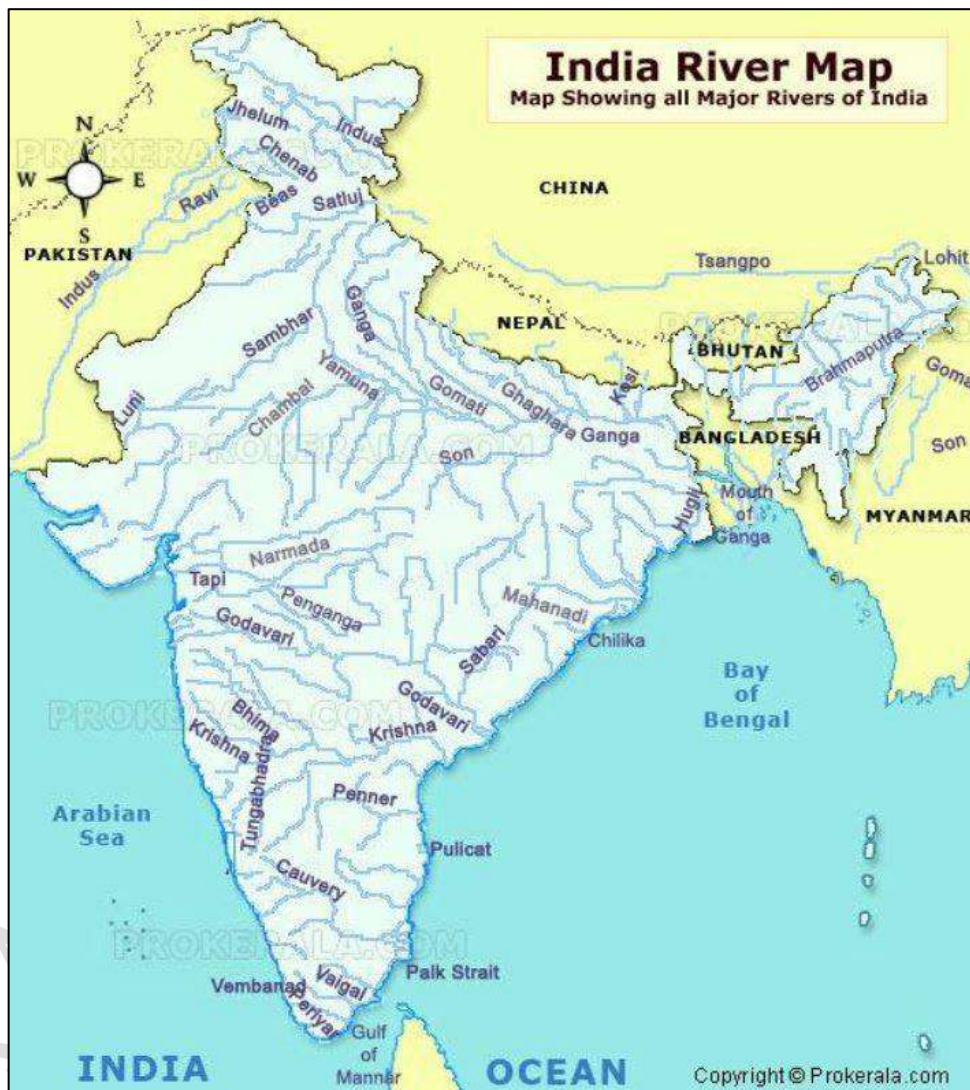
- According to a 2022 report by Central Pollution Control Board (CPCB), there are about 311 Polluted River Stretches (PRS – stretches in rivers where BOD>3mg/L) in 279 rivers (out of 603 rivers assessed).
- There are about 1,631 Sewage Treatment Plants (STPs) with a total capacity of 36,668 MLD but only 20,236 MLD of installed capacity is actually utilised, while the rest is directly discharged into the rivers.
- There are about 49 PRS in the Ganga basin, one of the most polluted basins in India.

What are the causes of river pollution?

- **Anthropogenic causes-** It includes sewage and wastewater, industrial effluents, agricultural run-offs etc.,
- **Deforestation-** It can cause soil erosion, and when these loose soil particles enter a water body, they can make the water murky and cause mechanical damage to aquatic organisms.
- **Accidents-** Incidents such as oil spills can be very damaging to the environment and aquatic life.
- **Eutrophication-** It is the natural cause, large quantities of nutrients in the waterbody causes the rapid growth of algae and decrease the oxygen level in the water.

What are the consequences of water pollution?

- **Water borne diseases-** It can harm human health in the form of cholera, typhoid, dysentery, and hepatitis.
- **Damage ecosystems-** It reduces oxygen levels, alters the pH, and introduces toxic substances into the water leading to the death of aquatic organisms, as well as the loss of habitats and food sources.
- **Bio magnification-** Tiny animals eat food that is contaminated by water pollution soon become food for bigger animals and humans.
- **Flood-** Soil erosion and the accumulation of waste has been known to cause flooding due to water pollution.



Ganga basin is one of the most polluted & biodiverse basins in India.

Measures taken for Conservation of Rivers

Constitutional and Legal Provisions

- **Article 262-** It gives the power to the Union to establish and adjudicate the inter-state water disputes prevailing in the country.
- **Right to Clean Water-** It is interpreted by judiciary as a Fundamental Right under Article 21.
- **Water Prevention and Control of Pollution Act, 1974-** It was enacted to prevent water pollution and cater to the maintenance of water bodies and carry out activities to promote restoration of water.

- It established two institutions to control water pollution
 - **Central Pollution Control Board (CPCB)** - It has implemented several charters aimed at water recycling and pollution prevention for industrial sectors such as textile, pulp and paper, sugar, etc.
 - **State Pollution Control Board (SPCB)**
- **Indian Penal Code**- Section 277 of IPC states that fouling of a public reservoir or a public spring voluntarily shall be liable to be punished with imprisonment of 3 months or with a fine of 500 rupees or both.
- **Water Prevention and Control of Pollution Cess Act, 2003**- It was enacted to levy and collect a cess on water consumed by certain types of industrial activities.
- **River Boards Act, 1956**- An Act to provide for the establishment of River Boards for the regulation and development of inter- State rivers and river valleys.

Schemes Introduced

- **National River Conservation Plan (NRCP)**- It is a Centrally Sponsored Scheme launched in 1995 for abatement of pollution in identified stretches of rivers in the country, excluding those in Ganga basin.
- **National Mission for Clean Ganga (NMCG)**- Under the initiative of Namami Gange programme being implemented by NMCG, Integrated River Basin Management (IBRM) approach is being followed.
- The mission also includes promotion of sustainable agriculture, river hazard management, basin protection against disasters, etc.
- **Amrit Sarovar Mission**- It was launched in 2022 for developing and rejuvenating 75 water bodies in each district of the country.
- **Mission Water Conservation**- It was launched to develop actionable framework for gainful utilization of funds.
- **National Water Mission**- It is a component under National Action Plan for Climate Change which ensure integrated water resource management helping to conserve water, minimize wastage and ensure more equitable distribution both across and within states.

What lies ahead?

- The communities must commit to recover freshwater biodiversity, restore natural river flows and clean up polluted water for people and nature to thrive.
- States need to take responsibility for setting up of infrastructure by either drawing funds from various initiatives such as AMRUT Mission, Smart City Mission, Swachh Bharat Mission, etc. or on their own.
- There should be online monitoring of STPs by regulators for better compliance by industrial units.
- NMCG-type activities should be extended to other rivers.

Water being a State Subject, steps for augmentation, conservation and efficient management of water resources are primarily undertaken by the respective State Governments

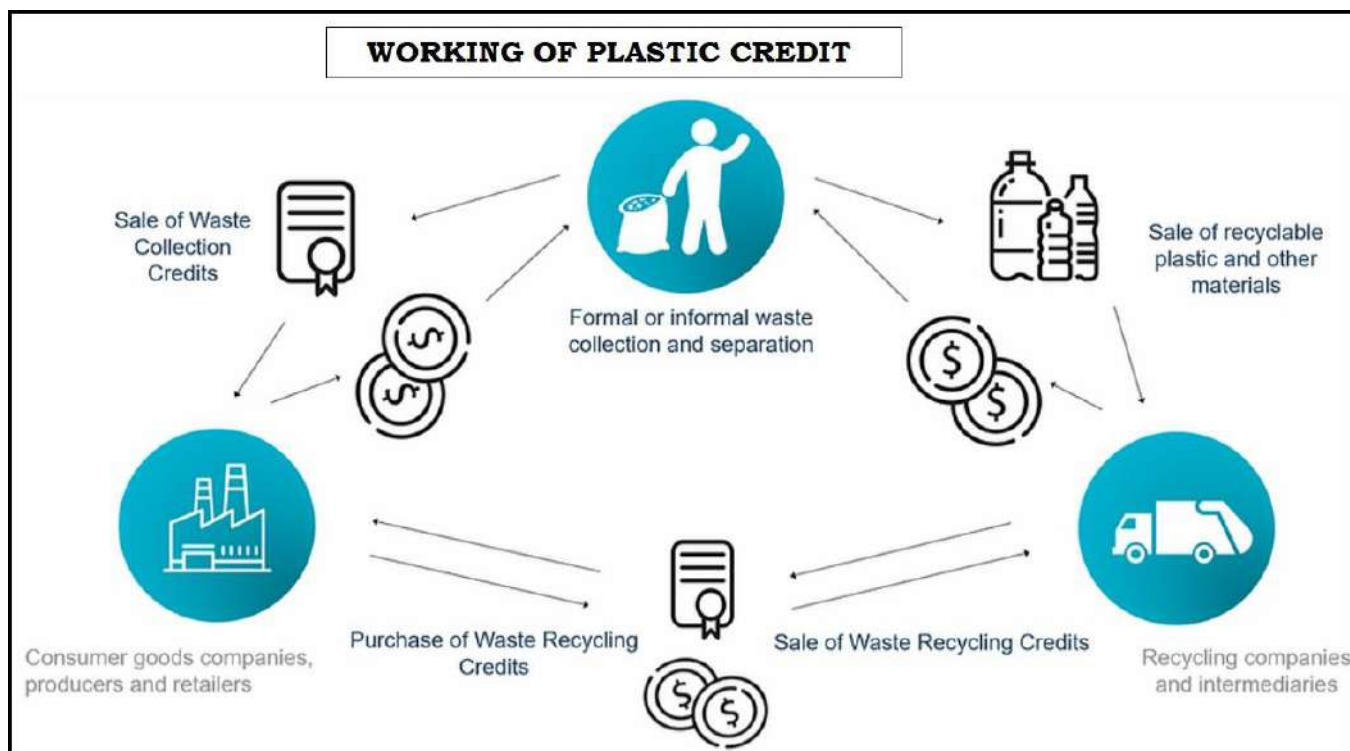
12.6 Plastic Credits

Why in news?

To cut down on plastic pollution, plastic credits are one of the tools being considered in UN-led talks in Nairobi.

What are plastic credits?

- **Plastic credits** - It is a market based mechanism that allows companies or individuals to *pay for plastic waste collection and recycling in exchange for a credit* that offsets their own plastic production or use.
- It is similar to carbon credits that many fossil fuel companies have purchased to try to offset their greenhouse gas emissions.
- **Facilitation**- The exchange is facilitated by accreditors like Verra, marketplaces like the Plastic Credit Exchange (PCX), or private companies that trade in credits or organize credit-generating activities.
- When companies buy enough plastic credits to offset their plastic footprint over a set period of time, they may claim **net-zero plastic**.



What are the advantages of plastic credits?

- **Combat plastic pollution-** It can reduce the amount of plastic that enters our oceans, rivers, and landfills.
- **Financial incentive-** It finances waste management infrastructure which helps in plastic waste collection and recycling and fosters sustainable solutions.
- **Circular economy-** The plastic materials are reused and recycled instead of being discarded or leaked into environment.
- **Eco friendly-** They reduce the environmental impacts of plastic pollution, such as greenhouse gas emission, water consumption, land use and biodiversity loss.
- **Income support-** Money raised from waste collection and recycling credits can generate income for the informal waste sector people who pick through waste.
- **Awareness generation-** It will help in engagement among consumers, businesses and government on the issue of plastic pollution and the need for more sustainable solutions.
- **Proper accreditation-** These credits are measurable, traceable, and verifiable, ensuring that they represent actual reductions in plastic waste.
- **Corporate social responsibility (CSR) -** By purchasing plastic credits, companies can demonstrate their commitment to sustainable practices and social responsibility.

What are the disadvantages of plastic credits?

- **Inefficient-** They are not a substitute for reducing plastic use and waste at the source, which is the most effective way to prevent plastic pollution and its environmental consequences.
- **Lack of clarity-** They are not standardized or regulated, which can confuse and mislead consumers and corporates.
- **Limited scope-** They may not address the social and economic aspects of plastic waste management, such as the rights and livelihoods of informal waste collectors.
- **Poor quality-** They may not account for the quality and durability of the recycled plastic, which may affect its environmental performance and value.
- **Unsustainability-** They promote a linear model of plastic production and disposal which would not foster circular economy and result in wasteful production.
- **Oversight-** Plastic credits may not address the root cause of plastic pollution, which is the overproduction and consumption of single-use plastics.

- They may create a false sense of sustainability and divert attention from the need to reduce and redesign plastic products.
- **Inaccurate data** - They may rely on self-reported data or inaccurate measurements, which could lead to fraud and double counting.
- **Fundamental flaw**- Certain environmental groups have criticised plastic credits as a [greenwashing](#) tool, stating that it encourages burning plastics and creates more emissions and health problems.

What lies ahead?

- Plastic credits should align with the existing frameworks and indicators such as **Global Reporting Initiative** and use a common methodology to measure and report their impact.
- They should have independent auditors and certifiers to validate claims and processes and avoid conflict of interest.
- They should support livelihoods and well-being of waste collectors and recyclers and create value for low-value plastic.
 - An example of a socially inclusive scheme is **Plastic Bank**.

12.7 Odd Even Scheme in Delhi

Why in news?

The Delhi government has announced the return of the odd-even road assigning scheme for a week beginning after Diwali, as the air pollution in Delhi is already in severe and severe plus category.

What is odd even scheme?

- **Origin**- The scheme was instituted in *US in 1979* when unstable conditions in Iraq and Iran led to a worldwide increase in oil prices.
- **Delhi** used the scheme for the 1st time in **2016**.
- **About** – The scheme restricts the vehicles on the road based on their license plate numbers.
- Private vehicles with registration numbers ending with an odd digit will be allowed on roads on odd dates and those with an even digit on even dates.
- **GRAP** - The scheme is a part of [Graded Response Action Plan \(GRAP\)](#), a set of measures drafted by the Centre's Commission for Air Quality Management (CAQM) to tackle air pollution.
- GRAP has 4 stages depending on the severity of air quality and the odd-even scheme is invoked under *Stage IV*, the highest level of pollution alert.

Why the Delhi government is implementing the scheme now?

- It will be the 4th time the vehicle-rationing scheme will be implemented in Delhi in the last 7 years.
- **Air pollution** - The scheme is the response to the annual spike in air pollution that the capital and its neighbourhood sees every year around this time.
- Central Pollution Control Board (CPCB) data show the average [Air Quality Index \(AQI\)](#) over the past few days has been consistently above 450 (hazardous category).
- **Smog**- Delhi is situated in a *shallow atmospheric bowl*, in which pollutants are trapped easily.
- When combined with falling temperatures and slow wind speeds, pollutants in the air are not dissipated, and tend to hang low over the surface.

DELHI'S ODD EVEN SCHEME

NOT EXEMPTED

Private petrol, diesel and CNG vehicles; vehicles of Delhi CM, ministers and bureaucrats

EXEMPTED

➤ Two-wheelers and commercial vehicles

➤ Cars driven by women – women co-passengers and children up to 12 years allowed in them

➤ Driven/occupied by differently-abled people

➤ Cars carrying students in school uniform

➤ Cars used for medical emergencies

➤ Vehicles of President, vice-president, PM, governors, CJI, Speaker, Union ministers, Opposition leaders in Rajya Sabha and Lok Sabha, other

CMs, SC judges, UPSC chairman, CEC & election commissioners, CAG, deputy chairman of RS, deputy speaker of LS, Delhi LG, Delhi high court chief justice and judges, lokayukta, NGT

➤ Emergency vehicles like ambulance, fire brigade, and hearse


➤ Enforcement vehicles like police, transport department, paramilitary forces and Delhi govt- authorised vehicle

➤ Those with defence ministry numberplates or with a pilot/escort; those of SPG protectees

➤ Embassy vehicles bearing CD numbers

➤ Delhi & Chandigarh EC vehicles

CHENNAI | SALEM | MADURAI | COIMBATORE

 SHANKAR'S IAS ACADEMY
SINCE 2004

DELHI | BANGALORE | THIRUVANANTHAPURAM

- **Stubble burning-** Across Punjab and Haryana, farmers prepare their fields for the rabi crop by setting fire to the stubble that is left in the fields which acts as a force multiplier.
- **Vehicular emission** -Vehicles also emit other pollutants such as NO₂.
 - The Centre for Science and Environment estimates that levels of NO₂ this year are up by as much as 60% compared to the same time last year.
- **Health impact-** Long-term exposure to pollution is associated with increased risk of hypertension, diabetes, cardiovascular diseases, chronic lung diseases, cancers, lower immunity, and depression.

Countries that used Odd-Even scheme to curb Pollution

- **China-** It was imposed in 2008 Olympic Games and in 2015 where restrictions were imposed on factory production and car use, forcing around 5 million cars to ply on alternate days for around 2 weeks.
- **France-** It is imposed during periods of high air pollution.
- **Mexico-** In 1989, citywide bans was implemented, with one day per one week based on odd even number plates.

To know about poor air quality in Mumbai, click [here](#)

What are the benefits and concerns of the odd-even scheme?

Benefits	Concerns
<ul style="list-style-type: none"> • Road congestion- The scheme reduces the number of cars on road by half, thus reducing the road traffic. • Pollution levels- It can lower the emission of <i>harmful pollutants</i> such as PM_{2.5}, PM₁₀, NO_x, CO, etc., • Public transport- It encourages people to use public transit system like carpool, cycle, or walk, which can have positive effects on their health and well-being. • Fuel efficiency- It increases the average speed of cars, which can improve fuel efficiency. • Citizen culture- It raises public awareness about the severity of air pollution and its impacts on human health, and motivates people to take action to protect the environment. • Car Pooling- It saw an altogether different rate of enthusiasm in order to generate business for private companies which had a positive result on the scheme. 	<ul style="list-style-type: none"> • Promotion of buying more vehicles- Rich families own more than 1 car and use their car with an odd registration number on the odd days and the car with even registration number on even days. • Other pollutants- Delhi has many industries that release harmful pollutants, hence traffic rationing proves insufficient. • Public transport- People who rely on their own vehicles to avoid the dismal public transport system of Delhi were forced to face hardships. • Traffic policy machinery - It will be overburdened to implement the scheme as traffic police has neither sufficient personnel nor resources even for blatant disregard of the normal traffic rules. • Exorbitant tariffs - The monopoly of the auto rickshaw drivers and cab owners enable them to charge exorbitant tariffs from the passengers.

What lies ahead?

- The need of the hour is to suggest other measures such as phasing out old vehicles, promoting electric vehicles, using air purifiers in schools as odd even scheme is not a long term solution.
- An efficient public transport system, cleaner cars and reducing the other sources of pollution would go a long way in reducing air pollution.

12.8 Recycling Electric Vehicles

Why in news?

Electric Vehicles (EVs) are seen as key to decarbonise mobility, but there are challenges in recycling lithium-ion batteries from electric vehicles.

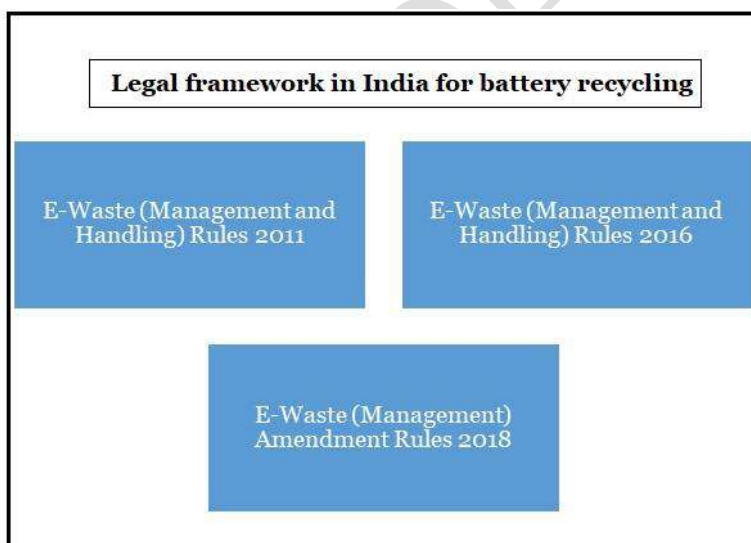
How the battery waste is managed in India?

Battery Waste Management Rules 2022	
Nodal agency	Ministry of Environment, Forest and Climate Change (MoEFCC)
Coverage	All types of batteries - EV batteries, automotive batteries, industrial batteries and portable batteries

Extended Producer Responsibility (EPR)	Producers (including importers) of batteries are mandated to collect and recycle/refurbish waste batteries
Online portal	Provides for exchange of EPR certificates between producers and recyclers/refurbishers
Recovery	Minimum percentage of recovery of materials from waste batteries is mandated
Polluter pay principle	Environmental compensation will be imposed for non-fulfilment of EPR targets and obligations set out in the rules

What are the concerns with the Battery Waste Management Rules?

- **Labelling requirements-** The labels on batteries in India does not carry an icon (a crossed bin) which indicates that the batteries cannot be disposed of in regular bins.
- **Lack of traceability-** The rules do not provide tracking of material used in the batteries, which is critical to reduce the carbon and environmental footprint of the batteries.
- **Design constraints-** There is an absence of eco-design during assembly for recycling to employ corrective methods.
- **Absence of harmonisation-** The rules do not establish regulatory standards for testing and classifying used batteries that have a second life.
- **Counterfeit documents-** - Recyclers or dismantlers are falsifying documents and moving the same shipments repeatedly to meet their targets.
- **Financial crunch-** Recycling plants are capital intensive and will be operating at low capacity as the volume of end-of-life batteries are still very low.
- The rules do not provide incentives for recycling capacity and facilities.



Global Climate Friendly Initiatives for Battery Recycling

- **Inflation Reduction Act, 2022-** It is a *US law* that allows recycled battery materials to qualify for significant tax credits.
- **End of Life Vehicles Directive-** It is a *European Union* initiative that mandates automakers to take back vehicle owners' end-of-life batteries.
- **Fit for 55-** It is a *European Union* package that requires the publication of battery carbon footprints by setting collection and recycling targets including minimum recycled content requirements for newly built batteries.
- **Battery passport-** It is a digital tool introduced by *European Commission* that seeks a carbon footprint declaration for batteries sold in Europe starting 2024.
- **China-** It's regulations encourage standardisation of battery design, production and verification to improve assembly and dismantling of used batteries.

Why there is a need for battery recycling and reuse?

- **Limited resource availability-** Recycling of batteries can generate a *source for rare metals*.
 - Using recycling technologies, 95% of metals can be recycled for use in manufacturing new batteries.
- **Environmental hazards-** If not handled well, it could reach in landfill & contaminates soil and groundwater.
- The environmental impact of metal recycling from [lithium ion batteries](#) waste is significantly less than from metal extraction from the mines.

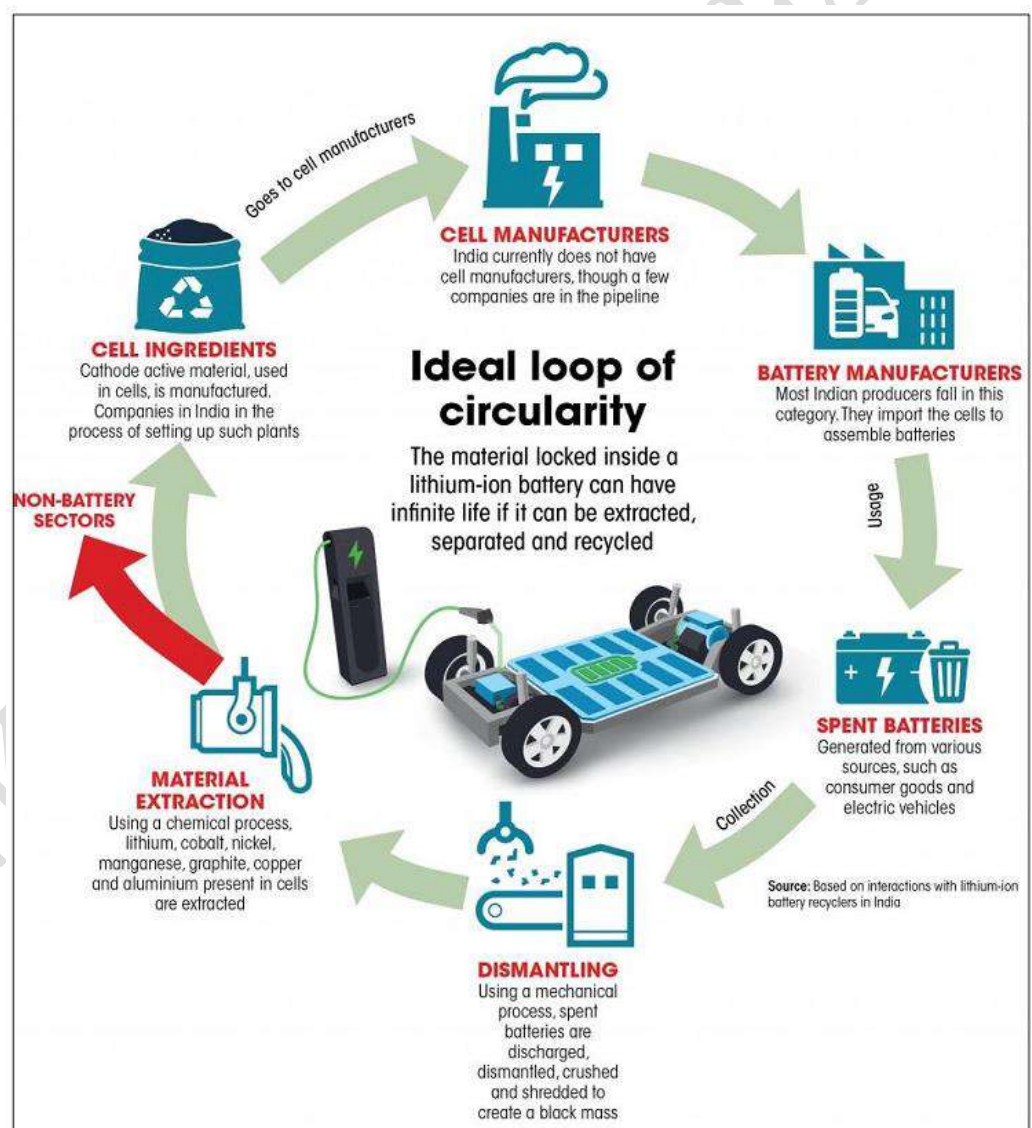
- **Import dependency-** It is important for India to establish recycling ecosystem to save forex.
 - India's major import is from *China* which holds 51% of global cell manufacturing capacity.
- **Supply chain disruption-** COVID 19 pandemic has exposed business risks as a result of disruptions in the global supply chain, resulting in a long lead time for raw material deliveries.
- Recent [Russia-Ukraine war](#) has also affected the supply chain of key battery metals like nickel and aluminium, along with crude oil.
- **Price discovery-** Creating a well-established recycle ecosystem can help discover the resale value of batteries for reuse/ recycle applications.

Telangana model- Electric Vehicle Policy provides incentives to recycling businesses for ultra-processing.

Punjab model- Punjab is creating an e-marketplace to encourage resale of used batteries along with incentives to promote resale.

What lies ahead?

- There is a need to revamp the 2022 Rules to make battery labelling mandatory and provide all the critical information needed on battery composition, performance etc., for efficient refurbishing and recycling.
- Mandatory battery durability requirements can incentivize the production of long-lasting batteries and support second-life usage.
- The Deposit Refund System which is mentioned in the 2022 Rules to provide incentives to customers to return batteries must be popularised.
- Disposal of batteries in landfill should be prohibited and an effective mechanism must be developed for proper disposal of batteries.



12.9 Emission Gap Report 2023

Why in news?

The UN report has revealed that the world was set to become warmer by at least 3 degree Celsius by the end of the century with the current climate policies of the countries.

Emission Gap Report 2023

- **Emission gap** – It is the difference where greenhouse gas emissions are projected to be in 2030 and where they should be to limit global warming to well *below 2°C or 1.5°C*.
- **Report** - It is an *annual assessment* that evaluates the gap between the amount of global greenhouse gas emissions now and what is necessary to meet the objectives of the *Paris Agreement*.
- Based on the latest scientific assessments and data, it explores the actions and policies needed to close the emission gap and achieve the goals of the Paris Agreement.
- **Published by**- United Nations Environment Program (UNEP)
- **Theme**- “Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again)”.

What are the key takeaways of the report?

- **Limited probability**- There is only a 14% chance of limiting global warming to 1.5°Celsius over pre-industrial levels.
- **Nationally Determined Contributions (NDC)**- Even if the existing NDCs are delivered by 2030, the world will warm by 2.5°C, breaching the 2°C target set by the Paris Agreement.
- **Lack of commitment**- Only 9 countries have updated their NDC since the [COP27](#) of UNFCCC in 2022.
- **Emissions**- Approximately two-thirds come from fossil fuel-based CO₂ emissions.
- [G20 nations](#) are responsible for three-quarters of the current warming.

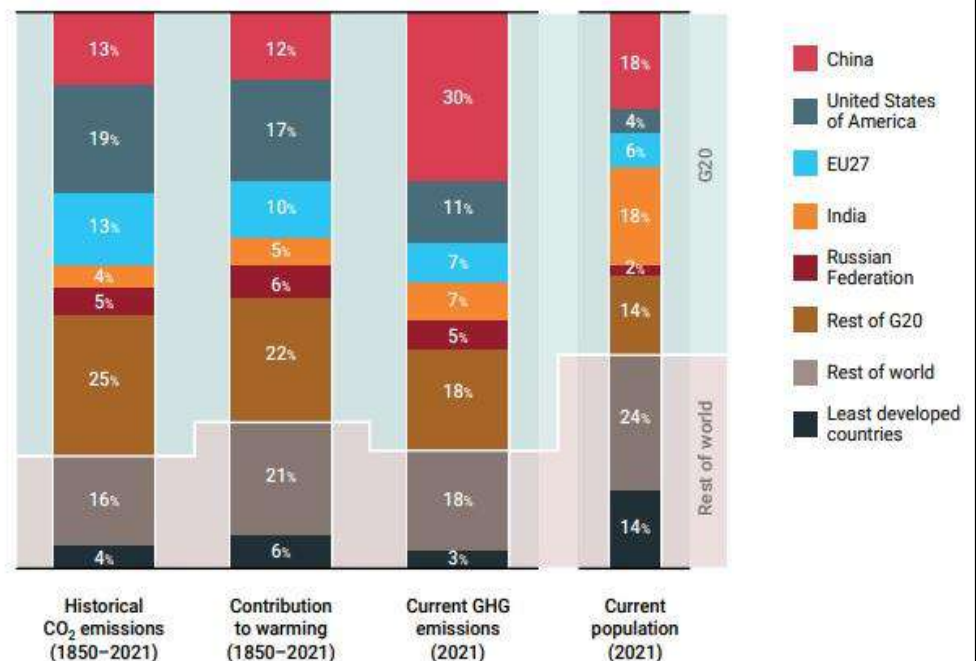
- The three largest emitters are **China, United States and India**.

- **Climate change**- There is increasing frequency and intensity of extreme weather events and temperature anomalies.

- As emission gap is widening urgent and ambitious action is needed to close the emission gap.

- **Lack of credibility**- The [net zero](#) commitments made by 97 parties, covering 82% of global emissions varies widely and are insufficient.

Current and historic contributions to climate change
(% share by countries or regions)



- **Temperature rise**-The world is on track to warm by at least 3°Celsius by 2100, and that 86 days in 2023 have already exceeded the 1.5 degree Celsius limit set by the Paris Agreement.

What are the suggestions made by the report?

- **Climate finance**- There is an urgent need for affordable finance in lower-middle-income countries for clean energy investments.
- **Net zero pledges**- Enhance the feasibility and credibility of net-zero pledges, by specifying the role of carbon dioxide removal and aligning near-term emission trajectories with long-term targets.
- **Policy framework**- Strengthen the policy support and innovation system by developing clear governance frameworks and incentives.

- **Collaborative action-** Increase the ambition and action of all actors, including national and subnational governments, businesses, investors, civil society and individuals, and foster collaboration and synergies across sectors and scales.
- **Foster transparency-** Enhance accountability of emission reduction efforts, by improving the quality and comparability of GHG inventories, NDCs and long-term strategies.
- **Co2 removal strategies-** CO2 removal strategies is the direct removal of CO2 from the atmosphere and its durable storage in geological, terrestrial, or ocean reservoirs or in products. It involves
 - Carbon capture and storage
 - Carbon capture and utilisation
- **Urgent action-** The world needs to reduce emissions by 8.7% every year from 2024 to achieve the 1.5°Celsius target.

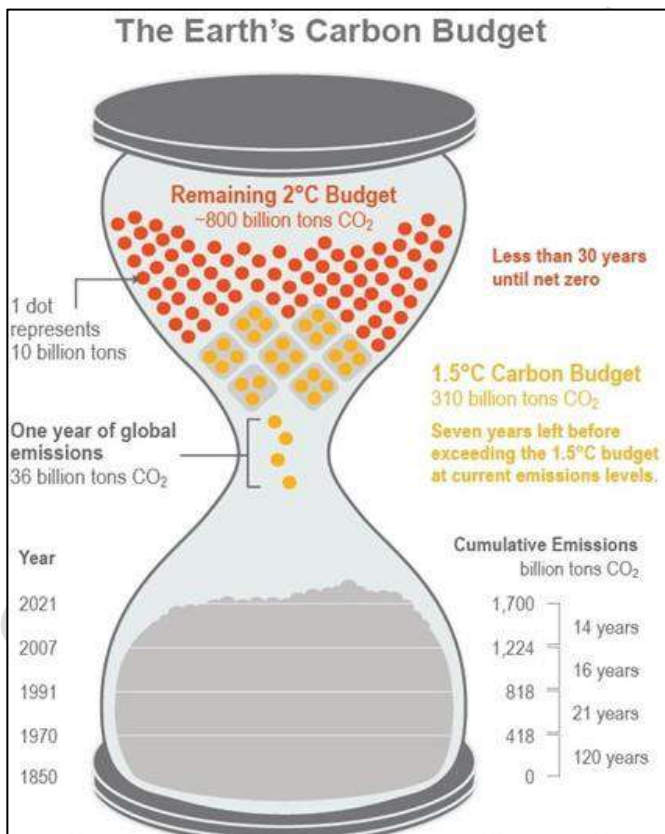
12.10 Global Carbon Budget

Why in news?

India needs to secure a fair and equitable share of the global carbon budget at [COP 28](#), as it is a key factor for limiting global warming.

What is a global carbon budget?

- **Global Carbon Budget** - It is the amount of CO2 that humanity can emit while still having a chance to contain global warming within 1.5°Celsius compared with preindustrial levels, as advocated by the [Paris Agreement](#).
- It is taken from the atmosphere, regional carbon emissions, CO2 emissions from land usage, carbon emissions from man-made projects in many forms.
- It is produced under the umbrella of [Global Carbon Project \(GCP\)](#).
- It is part of the greater carbon cycle and the ways in which the Earth's reservoirs of carbon are added to and subtracted from.



- The budget is estimated to be around **1 trillion tonnes of carbon**.
- **Need-** To understand how CO2 emissions (both natural and manmade) are contributing to the changes in the Earth's environment.

Global Climate Friendly Initiatives

- **Inflation Reduction Act-** It is a *US law* that aims to fight inflation, lower the deficit, reduce the price of prescription drugs for seniors, and reduce the country's carbon emissions.
- **Fit for 55-** It is a proposal by the European Commission to revise and update European Union (EU) legislation with the goal of reducing net greenhouse gas emissions by at least 55% by 2030 and achieving climate neutrality by 2050.
- **REPowerEU-** It is a plan by the European Commission to support clean energy transition and reduce the EU's dependence on fossil fuels, especially Russian gas, oil and coal imports.

What is the significance of global carbon budget?

- **Limits global warming-** It establishes how much CO2 can be emitted without exceeding the temperature goals of the [Paris Agreement](#).

- **Set targets-** It helps to set emissions reduction targets in a fair and effective way, based on the scientific evidence and value judgments.
- **Clean energy-** It encourages the development of alternative energy resources and more efficient ways to use energy, by making carbon-emitting fuels more expensive.
- **Fund-** It generates revenue that can be used to fund clean-energy technologies, compensate the affected people, or reduce other taxes.
- **Climate science-** It will help countries to stay within the remaining warming limit.
- **Road to net zero-** Governments can measure how well they are doing in reducing their climate impact.
- **Impetus to CBDR-** It boosts Common but Different Responsibilities (CBDR) that was formalized at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro.

IPCC AR6 has shown that almost four-fifths of the global carbon budget stands depleted and only a fifth remains to meet the target set in the Paris Agreement.

How does the carbon budget matter for India?

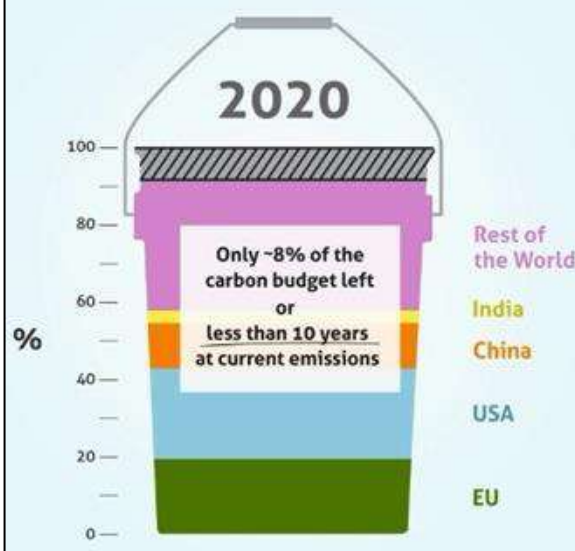
- **Carbon inequality-** Developed countries have appropriated a disproportionately larger share of the global carbon budget to date.
- South Asia, including India, has low historical and per capita emissions compared to North America and the world.
- **Carbon equity-** Developed countries should take more responsibility for reducing emissions and provide finance and technology to developing countries.
- India must recognize its fair share of the carbon budget as a strategic national resource, and demand it at the COP28 climate talks.
- **Development-** It is the first defence against climate change, India has made progress in reducing poverty and providing food security to millions of people, especially after the COVID-19 pandemic.
- **Non-discriminatory-** Developed countries have pressured developing countries to phase out coal, but have failed to do so themselves.

As per NITI Aayog- U.N. Development Programme's Multidimensional Poverty Index Report 2023 review, India has been able to lift more than 135 million poor out of poverty in less than 5 years (2015-2021).

Climate Friendly Initiatives of India

- **International Solar Alliance-** It was a joint effort by India and France to mobilize efforts against climate change through deployment of solar energy solutions launched in 2015.
- **Coalition for Disaster Resilient Infrastructure-** It is an international climate initiative by India in 2019 to promote resilient climate-proof critical infrastructure in member countries.
- **Global Biofuel Alliance-** It is an alliance driven by India, the United States, and Brazil, to accelerated adoption of biofuels, creating new biofuels, setting globally recognized standards, identifying global best practices, and ensuring industry participation.
- **LiFE mission-** Lifestyle for Environment is an international mass movement to protect and preserve the environment launched in COP 26 at Glasgow in 2021.

The carbon budget for 1.5 degrees



Paris Agreement

- It is a legally binding international treaty on climate change.
- **Launch year-** In 2015 and was adopted by 196 countries.

- **Aim-** To limit the global average temperature rise to well below 2°C above pre-industrial levels, and pursue efforts to limit it to 1.5°C.
- **Nationally Determined Contributions (NDCs)** - Since 2020, countries submit national climate actions to reduce their greenhouse gas emissions in order to reach the goals of the Paris Agreement.

12.11 Stubble Burning

Why in news?

Recently, Supreme Court asked the Punjab government why it could not fund the costs of crop residue management machines for marginal farmers.

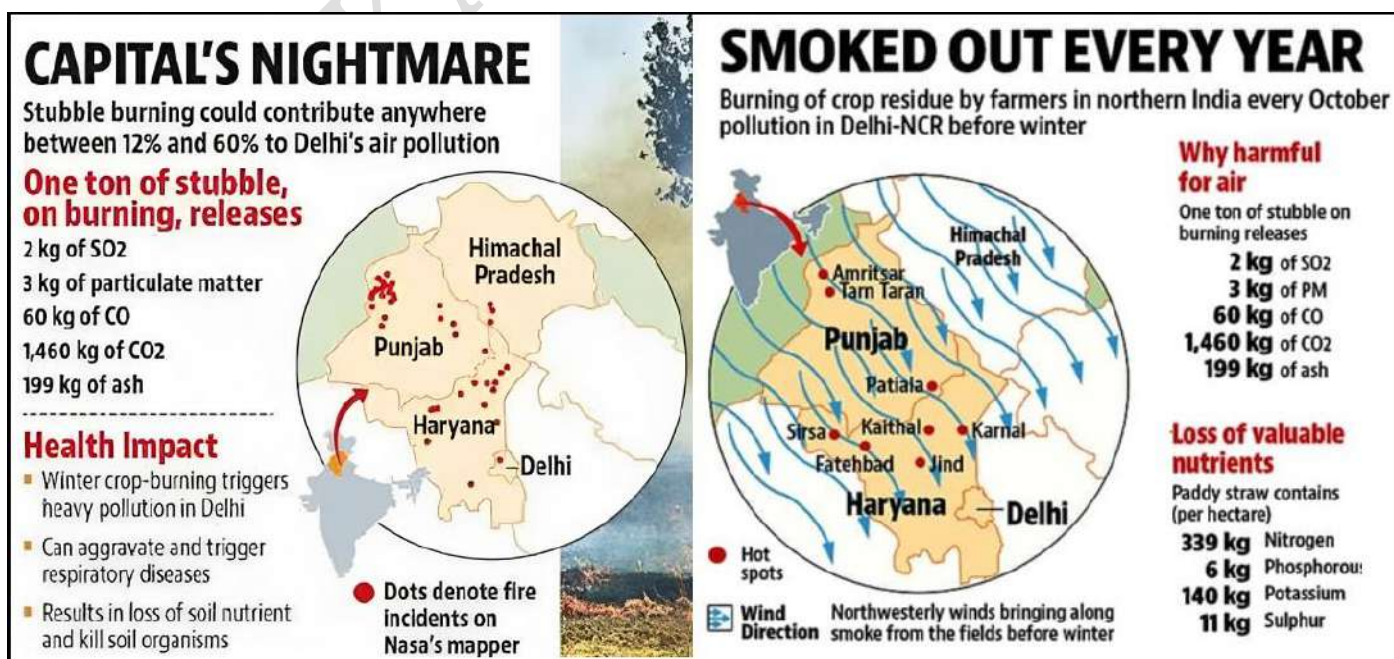
Why stubble burning is practised?

- Also called as **parali burning**, stubble burning is a method of removing paddy crop residues from the field to sow wheat.
- It is usually done in the last week of *September to November*.
- It is usually required in areas that use the combined harvesting method which leaves crop residue behind.
- It is practised by the farmers to prepare the land for the next cultivation.
- It is practised mainly in the *Indo-Gangetic plains* of Punjab, Haryana, and UP to clear the fields for rabi crop sowing.

Stubble burning	High prevalence
Rice	Punjab and Haryana
Wheat	Uttar Pradesh

Why stubble burning is practised?

- **Limited duration-** Multiple cropping and shortened intervals between crops give a very short window of about 10–15 days during which the field needs to be prepared for the next crop.
- There is only short time available between rice harvesting and sowing of wheat as delay in sowing wheat affects the wheat crop.
- **Cheap-** It is considered one of the cheapest methods to clean the field after the harvesting season.
- **Labour shortage-** Use of expensive labour for stubble extraction is not feasible, especially in Punjab and Haryana where farm sizes are large.
- **Clears all stubble-** The use of mechanized harvesters leaves stubble of 10– 30 cm in the field, depending on the type of crop, which was not the case earlier with manual harvesting.
- **Low crop residue-** The low commercial and economic value of crop residue, coupled with the high costs of processing, reduces its value for farmers.



What are the impacts of stubble burning?

- **Air pollution**- It emits toxic pollutants in the atmosphere containing harmful gases like carbon monoxide (CO), methane (CH₄), carcinogenic polycyclic aromatic hydrocarbons, volatile organic compounds (VOC).
- The combustion of agricultural residue is a prominent contributor to air pollution in certain regions of northern India.
- **Soil fertility**- Soil becomes less fertile and its nutrients are destroyed when the husk is burnt on the ground.
- **Heat penetration**- Stubble burning generates heat that penetrates into the soil, causing an increase in erosion, loss of useful microbes and moisture.
- **Climate change**- The release of toxic gases from stubble burning will increase global warming, further aggravating the climate change.
- **Uncontrolled firing**- Risk of fires spreading out of control, could turn into huge pit of flames.

Supreme Court's Remarks on Stubble Burning

- The court asked the Punjab government why it could not fund the costs of crop residue management machines for marginal farmers.
- Punjab responded that the *issue of manpower and fuel* for the machines was a challenge.
- The court warned that paddy cultivation would deplete the water table in Punjab and suggested switching to crops other than paddy to save water and reduce pollution.

What are the strategies to reduce stubble burning?

- **Promote agri-implements**- Punjab has rolled out schemes for providing subsidy for mechanical implements that can mix the crop residue with soil to improve fertility.
- Promote *co-ownership models* for the agri-implements which can make such implements accessible to farmers.
- **Foster awareness**- Farmers should understand the value of crop residues and use of agri implements in extraction and packaging.
- **Power generation**- State governments need to incentivise establishment of biomass-based power plants through fiscal interventions and prioritization. Example- [Biomass co-firing](#)
- **Promote R&D**- Punjab Agricultural University is developing a variant of paddy straw that has *lower silica content*, thereby making it suitable for utilisation in biomass-based power plants.
- **Biofuel production**- The State governments, along with appropriate policy interventions from the Central government need to incentivise utilisation of biofuels.
- **Industrial application**- Biomass pellets can be sold commercially as the main fuel for industrial boilers and replace coal. Micro-pelletization should be incentivised and its local usage promoted.
- **Crop residue collection mechanism**- Create a uniform decentralised mechanism for the collection, storage and commercial sale of crop residue.

Chhattisgarh model - A *gauthan* is a dedicated 5-acre plot, held in common by each village.

Here, all the unused *parali* (paddy straw in Chhattisgarh) is collected through *parali daan* (people's donations) and converted into organic fertiliser by rural youth.

12.12 Climate Smart Agriculture (CSA)

Why in news?

Climate resilient agriculture has the potential to assure food security, empower farmers, and protect our delicate ecosystems.

What is Climate Smart Agriculture (CSA)?

- It is a comprehensive strategy for managing farmlands, crops, livestock, and forests that *counteracts the negative impacts of climate change* on agricultural productivity.
- FAO in 2019 said that CSA is an approach for transforming food and agriculture systems to support sustainable development and safeguard food security under climate change.

Why India needs Climate Smart Agriculture (CSA)?

- **Climate change-** The world's southern continent are reportedly experiencing *severe drought* due to climate change, which negatively impacts agricultural production and farmers' livelihoods.

- **Low crop yield-** In India, crop yield is declining due to climate change. Between 2010 and 2039 it could be as high as 9%.

- **Climate disparity-** The ongoing effects of climate change such as heat waves, flash floods, droughts and cyclones are negatively influencing lives and livelihoods.
- **Pressure on land-** India has a large and growing population, but limited land area thereby putting pressure on the small and marginal farmers, who produce most of the country's food and are vulnerable to climate shocks.
- **Impetus to Paris Agreement-** The goal of limiting global warming by reducing GHG emissions is tied directly to the success of the CSA.
- **High GHG emission-** Agricultural sector produces a large amount of Green House Gas (GHG) emissions which is around 17% in 2018.
- **Food insecurity-** Both population expansion and dietary changes are contributing to increase in demand for food.
- **Radical reform-** The farming industry needs a major reform to deal with global warming and improve food output and revenue in an eco-friendly manner.
- **Innovative approach-** It charts development pathways that can make the agriculture sectors more productive and sustainable and to contribute to climate change adaptation and mitigation.

Main Objective of CSA

Productivity

- It enhances crop and livestock production and farm profitability.
- It works to raise overall agricultural productivity and provide greater food security.

Adaptation

- CSA aims to fortify agricultural infrastructure against the destructive effects of global warming
- This entails taking measures to minimize susceptibility to climate related threats like floods, drought or extreme heat.

Mitigation

- One of the primary goals of CSA is to reduce the amount of greenhouse gases released into the atmosphere because of farming activities.
- It includes methane emissions from livestock, paddy rice cultivation, and synthetic fertilizer use.

Site-specific no-tillage Northwest Indo-Gangetic Plain for wheat production is advantageous for fertilizer management and can boost yield, nutrient usage efficiency, and profitability while lowering GHG emissions.

What are the challenges in adopting CSA?

- **High cost-** CSA may adopt expensive agricultural technology or infrastructure which are out of reach for marginal farmers.
- **Market barriers-** The market for CSA products is still small, which makes it unprofitable.
- **Policy paralysis-** Farmers find it challenging to embrace CSA strategies due to governmental and regulatory obstacles.
- **Lack of awareness-** Farmers may not be aware of the information and access to established approaches of CSA.
- **Cultural resistance-** Inexperience or conflicts with the established farming norms acts as a barrier.
- **Lack of definition-** CSA does not have a clear and agreed-upon definition, which allows for different interpretations and applications of the concept.
- **Monopoly-** CSA is influenced by the interests of the fertilizer industry ([Greenwashing](#)), which is a major source of GHG emissions and environmental degradation.

Steps taken by India to promote CSA

- **National Adaptation Fund on Climate Change-** It was launched in 2015 to support concrete adaptation activities which mitigate the adverse effects of climate change.

- **National Innovation on Climate Resilient Agriculture-** It is a network project of Indian Council of Agricultural Research (ICAR) that aims to enhance the resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration
- **National Action Plan on Climate Change-** It was launched in 2008 to mitigate and adapt to the adverse impact of climate change.
- It contains 8 national missions that cover various sectors and objectives related to climate change.
- **Soil Health Mission-** It was launched in 2015 that provides soil health cards to farmers, which contain information on soil nutrient status and fertilizer recommendations.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) -** It was launched in 2015 to enhance water use efficiency and irrigation coverage in agriculture.
- **Paramparagat Krishi Vikas Yojana-** It is a sub scheme under PMKSY that promotes organic farming and certification.
- **Biotech KISAN-** It was launched in 2017 as a farmer-centric scheme that empowers small and marginal farmers through biotechnology
- **Climate Smart Village-** It was launched in 2011 as an approach that integrates various climate-smart interventions and practices at the village level to enhance farm productivity.

What lies ahead?

- CSA has the potential to assure food security, empower farmers, and protect our delicate ecosystems by merging innovation, resilience, and sustainability.
- In the face of a changing climate, the path of CSA stands out as a source of inspiration and transformation for a world working to ensure a sustainable future.

12.13 Smog in North India

Why in news?

According to scientists, North India can tackle smog using eco-friendly farm practices from the South.

What is a smog?

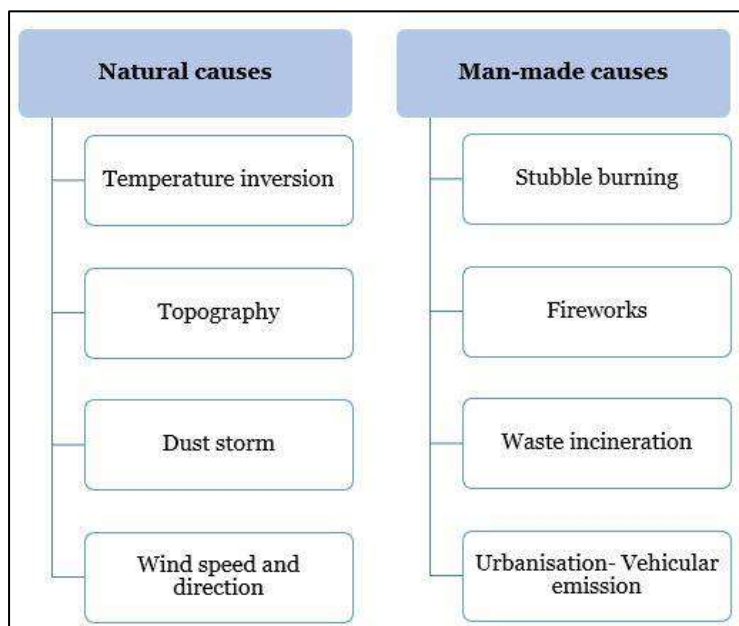
- **Smog**= Smoke + Fog
- **Photochemical smog-** It is called as a Los Angeles smog which is produced when sunlight reacts with nitrogen oxides and at least one volatile organic compound (VOC) in the atmosphere.
- Sunlight hits these chemicals, thus forming airborne particles and ground-level ozone or smog.
- **Sulphurous smog** -It is called as London smog which is caused by the high concentration of sulphur oxides in the atmosphere

Type of ozone	About
Stratospheric ozone	It is high above the Earth, acts as a barrier that protects humans and the environment from excessive amounts of solar ultraviolet radiation.
Ground level ozone	It is trapped near the ground by heat inversions or other weather conditions, it causes the respiratory distress and burning eyes associated with smog

What are the causes of smog in North India?

- **Stubble burning-** The tight window between rice harvesting and wheat planting compels farmers in Punjab and Haryana to resort to burning stubble urgently.
- It produces large amounts of smoke and particulate matter that travel to nearby regions.
- **Urbanisation-** Industries in Delhi and other cities emit pollutants such as sulphur dioxide, nitrogen oxides, and volatile organic compounds that react with sunlight and form smog.
- **Dust-** Construction activities, road dust, and desert storms generate fine dust particles that reduce visibility and worsen air quality.

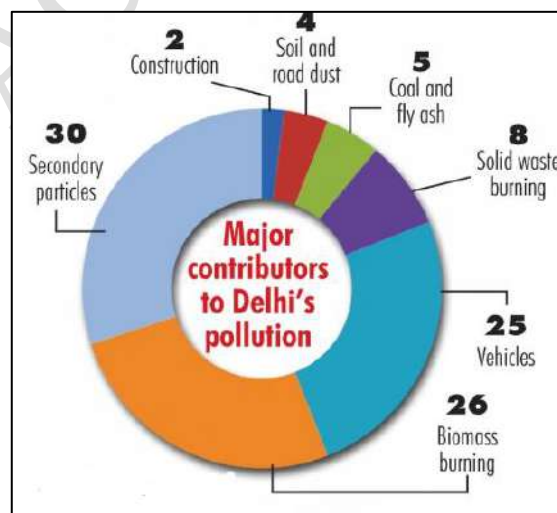
- **Waste incineration**- Burning of garbage and biomass in open dumps and landfills releases toxic gases and smoke into the air.
- **Fireworks**- During festivals such as Diwali, people burst crackers that produce smoke and metal particles that add to the pollution.
- **Vehicle emissions**- The increasing number of vehicles on the roads, especially diesel ones, emit carbon monoxide, nitrogen oxides, & particulate matter that contribute to smog.
- **Temperature inversions**- These are layers of air in which temperature increases with height, instead of decreasing as usual.
- This prevents the vertical mixing of air and traps pollutants near the surface.
- **Topography**- The shape and features of the land, such as mountains and valleys, affect the flow and distribution of cold and warm air.



- This can influence the formation and strength of temperature inversions and the direction of wind currents.
- **Wind** - The speed and direction of the wind can affect the transport and dispersion of pollutants.
- Low wind speeds and unfavourable wind directions can result in the accumulation of pollutants over the region.

What are the consequences of smog?

- **Poor air quality**- CPCB data show the average [Air Quality Index \(AQI\)](#) over the past few days has been consistently above 450 (hazardous category).
- **Health problems**- It can cause or aggravate various health problems such as respiratory diseases, eye irritation, heart disease, birth defects, and reduced growth.
- **Loss of biodiversity**- Smog can inhibit photosynthesis, thereby damaging crops and forests.
- **Climate change**- Smog can also affect the climate by altering the radiative balance of the Earth.
- **Economic losses**- It can reduce the productivity, increase the health care costs, and lower the quality of life.
- **Cultural damage**- A thick layer of smog has engulfed the Mughal era monument Taj Mahal leading to discolouration, causing damage to its marble surface and the growth of algae in its walls.



What can be done to tackle smog?

- **Eco-friendly farming practices**- Indo-Gangetic Plain (IGP) of North India can reduce its smog problem by adopting practices like mulching and nitrogen-fixing that are used in the Cauvery basin of south India.
 - **Mulching**- It involves covering the soil surface with organic or inorganic materials that can help turn the stubble into natural manure and enrich the soil.
 - **Nitrogen fixing**- It involves growing plants that can convert atmospheric nitrogen into plant-available forms thus reducing the need for chemical fertilizers.
- **Alternate crop patterns**- Encourage farmers to shift away from rice and wheat cultivation and grow alternative crops with less stubble output.

12.14 Climate Finance

Why in news?

During the 3rd Climate and Development Ministerial, Sultan bin Ahmed Al Jaber, COP28 President, has emphasized the need to address adaptation finance gaps and make climate finance more accessible to vulnerable nations.

What is climate finance?

- **Climate finance** – It refers to local, national or transnational financing, drawn from public, private and alternative sources of financing to support mitigation and adaptation actions that will address climate change.
- *UNFCCC, Kyoto Protocol and the Paris Agreement* call for financial assistance from parties with more financial resources to those that are less endowed and more vulnerable.
- **Significance** – It can help countries transition to low-carbon and climate-resilient development paths.

What are the global climate financing mechanisms?

- **Global Environment Facility (GEF)**- [GEF](#) serves as financing mechanism for the following conventions

Conventions	About
Convention on Biological Diversity	Aims to conserve biological diversity, use its components sustainably, and share the <i>benefits of genetic resources</i> fairly and equitably
United Nations Framework Convention on Climate Change (UNFCCC)	An international environmental treaty to combat dangerous human interference with the climate system, by <i>stabilizing greenhouse gas</i> concentrations in the atmosphere
Stockholm Convention (2001)	An international environmental treaty to eliminate or restrict the production and use of <i>persistent organic pollutants</i>
UN Convention to Combat Desertification	A convention to combat desertification and mitigate the effects of drought through national action programs.
Minamata Convention	An international treaty to protect human health and environment from anthropogenic emissions and <i>releases of mercury and its compounds</i>
Montreal protocol (1989)	An international treaty to <i>phase out the production of ozone depleting substances</i> . (GEF is <i>not formally linked</i> to this protocol, but supports its implementation in transitioning economies)

- Special funds set up and managed under GEF include
 - The Special Climate Change Fund (SCCF)
 - The Least Developed Countries Fund (LDCF)
- **Earth Summit- Common but Differentiated Responsibilities (CBDR)** is a principle that was formalized in UNFCCC of Earth Summit in Rio de Janeiro, 1992.
- **Kyoto protocol**- It is based on CBDR principle.
 - **Market based mechanisms**- Climate friendly investments like Clean Development Mechanism (CDM), Emission Trading.
 - **Adaptation fund**- *Marrakesh Accords* established this fund under CDM, which supports projects and programs that assist vulnerable communities in coping with the climate change impacts.
- **Green Climate Fund (GCF)**- It was established in 2010 as financial mechanism for UNFCCC based in *Incheon, South Korea*.

In accordance with the principle of “CBDR”, developed countries have to provide financial resources to assist developing country Parties in implementing the objectives of UNFCCC.
- It supports program, policies, projects, etc. through state of the art funding window that involves a country owned partnership approach and flexible financing solutions and climate investment expertise.
- **Paris Agreement**- It was adopted in 2015 which reaffirms the commitment of developed countries to mobilize 100 billion dollar per year by 2020 and extends it until 2025.
- **New Quantified Collective Goal**- By 2025, climate finance will be set starting from 100 billion dollar per year.

What are the concerns with the climate financing mechanisms?

- **Financial mobilisation-** The developed countries are required to provide financial resources to developing countries, but there is no agreed approach to share the burden of this goal.
- **Lack of contribution-** The developed countries have not been able to meet the mark of a mobilisation of 100 billion dollars climate finance.
- **Financial crunch-** The financial needs of developing countries to switch to low-carbon and climate resilient development are not adequately funded by the financial mechanisms of the UNFCCC.
 - India, needs 206 billion dollars for adaptation and 834 billion dollars for mitigation until 2030.
- **Lack of political will-** The developed countries showed strong political will to respond to the *global financial crisis* in 2009-10 by mobilising 1.1 trillion dollars in short time, but same commitment is missing when it comes to climate finance transfers.

INITIATIVES SUPPORTED BY COP28 PRESIDENCY

- > The urgent delivery of the long-overdue US\$100 billion annual funding commitment by developed countries to help developing countries;
- > Substantial replenishment of the Green Climate Fund, emphasising a balance between mitigation and adaptation;
- > New adaptation finance pledges towards doubling adaptation finance by 2025;
- > Successful replenishment of the Adaptation Fund, the only dedicated multilateral fund for adaptation; and
- > Timely operationalisation of the Loss and Damage Fund, a crucial element in the discussion on adaptation.
- > The UAE will also host the Adaptation Fund Contributor Dialogue during the first week of COP28. The Contributor Dialogue will be a pledging conference to support vulnerable nations in the fight against climate change.

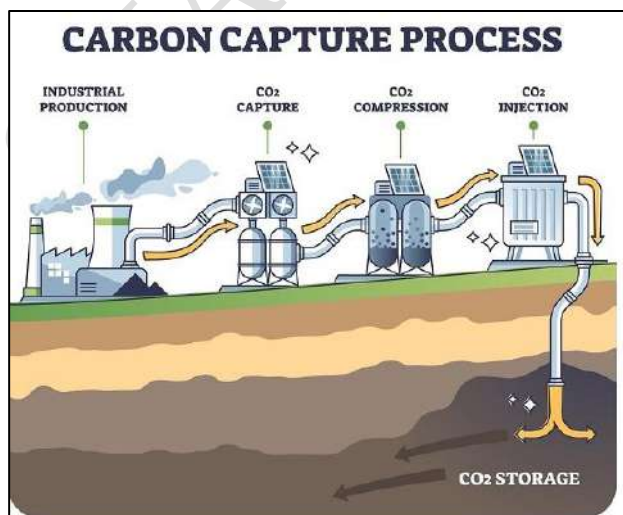
12.15 Carbon-Dioxide Removal

Why in news?

As nations gather for the [COP 28](#) in Dubai, the question of carbon capture's future role in a climate-friendly world will be in focus.

What is Carbon Dioxide Removal (CDR)?

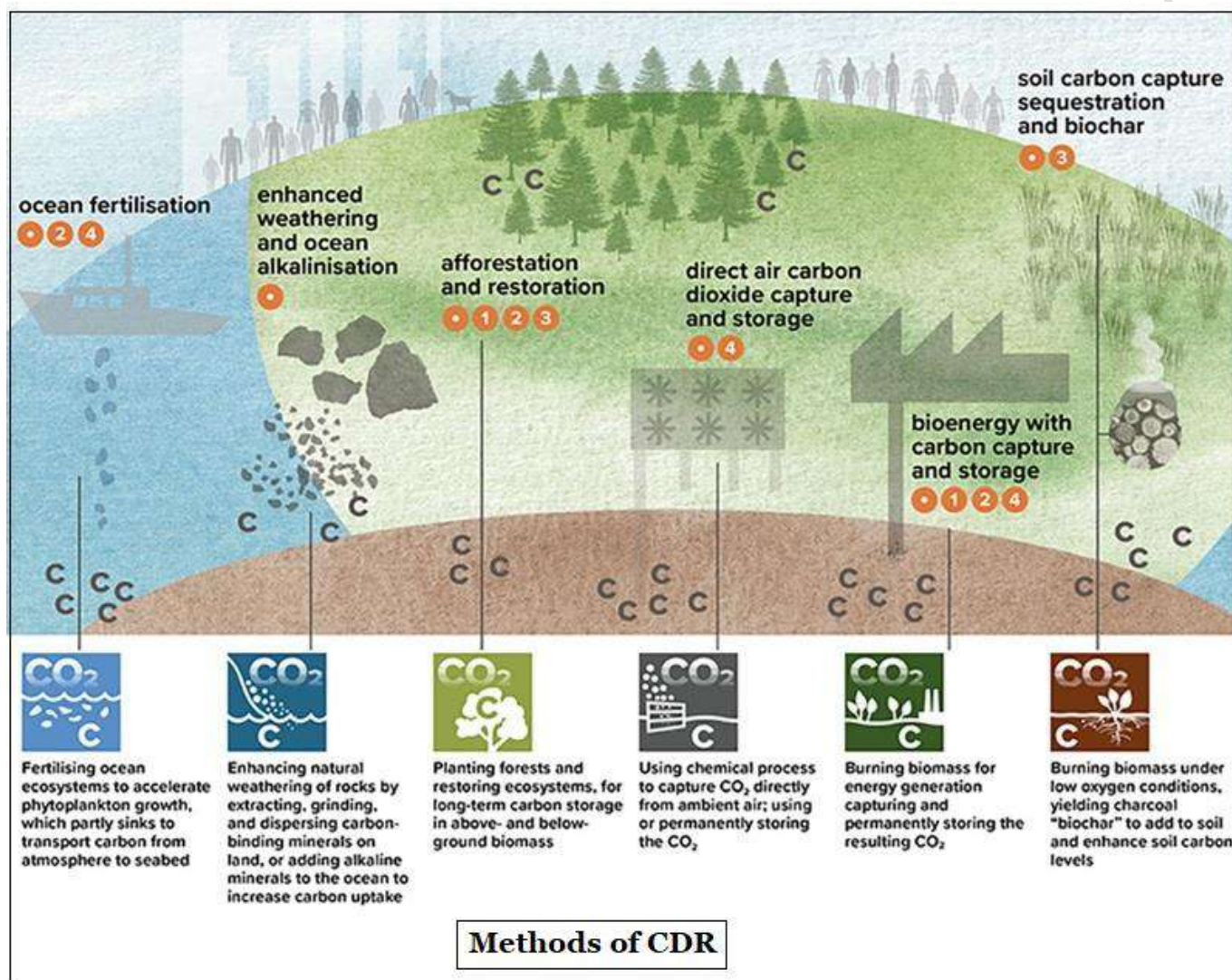
- **Carbon removal-** Using technologies, practices, and approaches to remove carbon dioxide (CO₂) from our atmosphere through deliberate and intentional human actions.
- It captures CO₂ from the atmosphere and locks it away for decades or centuries in plants, soils, oceans, rocks, saline aquifers, depleted oil wells, or long-lived products like cement.
- **Process-** CDR can be done through traditional or technological processes or both.
- **Forms of CDR-** The most common form of carbon capture technology involves *capturing the gas from a point source* like an industrial smokestack.



Process	Examples
Traditional process	<ul style="list-style-type: none"> • Afforestation • Reforestation • Agri practices that sequester carbon (carbon farming)
Technological process	<ul style="list-style-type: none"> • Bioenergy with Carbon Capture and Storage (BECCS) • Direct Air Carbon Capture and Storage (DACCS) • Enhanced rock weathering

- **Carbon storage-** It includes
 - **Carbon capture and storage (CCS)** - The carbon can be moved directly to permanent underground storage.
 - **Carbon capture, utilization, and storage (CCUS)** – Carbon can be used in another industrial purpose first.
- As of 2023, CDR is estimated to remove around 2 gigatons of CO₂ per year, which is equivalent to 4% of the greenhouse gases emitted per year by human activities.

What are the different CDR methods?



CDR method	About	Challenges
Afforestation/ Reforestation	<ul style="list-style-type: none"> • Converts abandoned or degraded agricultural lands into forests. • Additional trees can sequester more carbon dioxide from the atmosphere. 	<ul style="list-style-type: none"> • Increases the competition for land. • May limit the options for food production and biodiversity conservation.
Biochar	<ul style="list-style-type: none"> • A substance produced by <u>burning organic waste</u> from agricultural lands and forests in a controlled process called <u>pyrolysis</u>. • Improve soil quality, which in turn improves soil fertility, productivity and crop yield. 	<ul style="list-style-type: none"> • Health and environmental impacts of particulate matter produced during pyrolysis. • Sourcing sustainable biomass at a scale.

BECCS	<ul style="list-style-type: none"> Combines energy production, biological carbon removal and geological storage. Uses biomass in combustion to generate energy, then captures the emitted carbon for geological injection. 	<ul style="list-style-type: none"> Can create competition for land use with food production, placing pressure on food security. Can increase the use of fertilisers.
DACCS	<ul style="list-style-type: none"> <i>Extracts CO₂ directly</i> from the atmosphere, and is permanently stored in geological formation or used for other application. 	<ul style="list-style-type: none"> Accelerates fossil fuel extraction activities, potential CO₂ leakage from storage sites
Enhanced rock weathering	<ul style="list-style-type: none"> Involves <i>pulverising silicate rocks</i> to bypass the conventionally slow weathering action. 	<ul style="list-style-type: none"> Energy intensive process and generates emissions.
Ocean alkalinity enhancement	<ul style="list-style-type: none"> A <i>chemical removal method</i> that involves adding alkaline substances to seawater to accelerate the natural sink. 	<ul style="list-style-type: none"> Potential for increased greenhouse gas emissions and can release by-products like trace metals.

What lies ahead?

- CDR methods require appropriate governance and policies as they can cause adverse side-effects apart from the predicted benefits.
- The need of the hour is to accelerate research and development and incentivise CDR deployment, a political commitment, including reliable measurement, reporting, and verification of carbon flows as recommended by IPCC.

13. SCIENCE & TECHNOLOGY

13.1 Issues with Nano Drones

Why in news?

The emergence of Nano and micro drones and compact unmanned aerial vehicles (UAVs) with advanced capabilities, introduce fresh security challenges.

What are drones?

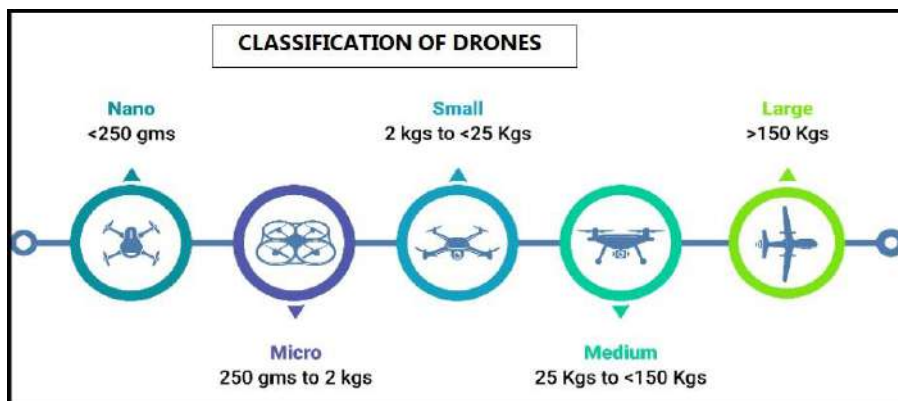
- Drone-** It means an aircraft that can *operate autonomously or remotely* without a pilot on board.
- India reported 79 cases of using drones for weapon delivery 2020, 109 in 2021 and 266 in 2022.

Provisions under Drone (Amendment) Rules 2022

- Criteria-** To operate a drone legally, the criteria set by the Civil Aviation Ministry and the Directorate General of Civil Aviation must be adhered to.
- Exception-** Nano/micro category drones for non-commercial use.
- All drone activities are permitted only after receiving prior approval for a flight or series of flights.
- Licence-** The remote pilot certificate will not be required for flying small-to-medium size drones of *up to 2 kg* for non-commercial purposes.

What are the challenges posed by Nano drones?

- Security-** Although Nano drones lack artificial intelligence and machine learning capabilities, they possess lethal intelligence-gathering capabilities.



- **Safety-** Nano drones can be difficult to detect, and their small size makes it difficult to regulate their use.
- Radars are dedicated to detecting aerial tracks, but mini-drones have low radar signatures, making them challenging to identify, especially in urban areas with potential false alerts.
- **Drone Swarms-** When deployed in swarms, they can become highly dangerous without effective countermeasures.
- **Waste disposal-** Nano drones are often made of lightweight materials which can be difficult to recycle or dispose of safely.
- **Complexity-** Protecting against small UAV threats is a complex task that goes beyond simply stopping the drone.

How to detect the Nano drones?

- **Sensors-** To enhance detection capabilities, a combination of sensors is essential.
- **EM sensors-** These defence systems capitalise on the radio signals used for drone communication (uplink and downlink).
- Intercepting these signals through electronic surveillance helps locate the drone and its control station.
- **Infrared sensors-** Thermal cameras can detect drones even in low visibility conditions and at night.
- **Acoustic sensors-** Drones that produce noise during flight can be detectable by acoustic sensors.
- These sensors help classify the drone based on its specific noise characteristics, making them useful in conjunction with radar systems to cover both short and long ranges.

What lies ahead?

- An integrated anti-drone dome with cutting-edge technology is crucial for safeguarding critical sites and events.
- By investing in such defences, India can protect citizens and assets from evolving drone threats.

Drone Policy of India

- **Drones Rules, 2021** - It provides the regulatory framework for commercial use of drones through certification, registration and operation of drones, airspace restrictions, research, development and testing of drones, training and licensing, etc.
- **Drone Airspace Map-** It has opened nearly 90% of Indian airspace as a green zone for drone flying up to 400 feet.
- **Production Linked Incentive (PLI) Scheme-** To promote the growth of drone manufacturing by private companies.
- **UAS Traffic Management (UTM) Policy Framework-** It is an approved public or private entity that would assist various stakeholders to meet the operational requirements for enabling safe and efficient use of airspace,
- **Drone Certification Scheme-** It was notified for making it easier to obtain type certificate by drone manufacturers.
- **Drone Import Policy-** It banned import of foreign drones and freeing up import of drone components.
- **Drone (Amendment) Rules, 2022-** It abolished the requirement of a drone pilot licence for drones of up to 2 kg for non-commercial purposes.

13.2 AI Safety Summit 2023

Why in news?

Recently, the World's 1st Artificial Intelligence (AI) Summit was held at Bletchley Park, a historic site in UK where the Enigma code was cracked during World War II.

Bletchley Park- The Birthplace of Artificial Intelligence (AI)

- It is a historic site in England that was the headquarters of the *Government Code and Cypher School* during World War II.

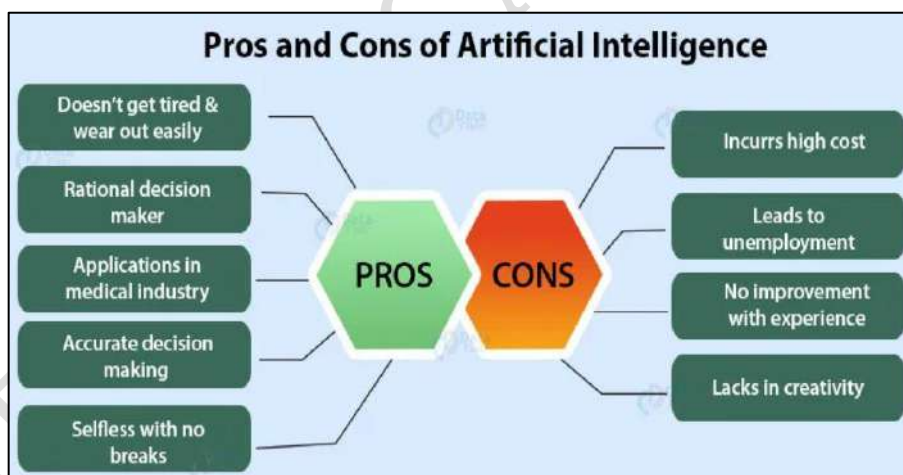
- It is considered the birthplace of modern computing and artificial intelligence.
- **Enigma code** - Bletchley Park is most known for cracking the Enigma code, the *complex cipher system* used by the Nazis during World War II to encrypt their radio messages
- It was cracked by **Alan Turing** who was often considered as the *father of modern computer science*.
- **Colossus**- A machine called Colossus was built at Bletchley Park to break the *Lorenz cipher*, used by the German High Command.
- It was the world's first programmable, electronic, digital computer, but it was destroyed and kept secret after the War.
- Bletchley Park houses the world's largest collection of working historic computers at the *National Museum of Computing*.

What is AI?

- **Artificial intelligence** (AI) is the simulation of human intelligence processes by machines, especially computer systems.
- Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

What is the London Summit on AI?

- **AI safety summit**- A meeting of 28 nations, including the U.S. and China, to discuss the risks and benefits of AI and how to regulate its development and use.
- The summit is centered around '**frontier AI**', which is defined as "highly capable foundation models that could possess dangerous capabilities sufficient to pose severe risks to public safety."
- **Aim**- To address the safety and ethical issues of AI, especially the advanced large language models (LLMs) that can generate natural language texts.
- **Two-pronged agenda**
 - Identifying risks of shared concern and building the scientific understanding of them
 - Building cross-country policies to mitigate the concerns
- **Key takeaways of the Summit**
 - **Bletchley Declaration** was signed at the summit, pledging to work together to understand and manage the potential catastrophic effects of AI, especially the cutting-edge frontier AI that could threaten humanity's existence.
 - The summit discussed the establishment of an *international register of frontier AI models* that will allow governments to assess the risks involved.
 - The **world's first AI Safety Institute** has been launched in the **UK**, tasked with testing the safety of emerging types of AI.



What are the key highlights of Bletchley Declaration?

- **International Cooperation**- The declaration underscores the necessity for a united front in addressing the challenges and leveraging the opportunities that AI presents on a global stage.
- **Safety Standards**- It includes shared commitment to reducing risks associated with AI and ensuring that these technologies are developed with a safety-first approach.
- **Ethical AI**- The declaration ensures that AI technologies respect human rights, privacy, and democratic values, fostering a human-centric approach to AI.

- **Transparency and Accountability**- Both are seen as a cornerstone for building public trust and understanding, essential for the successful integration of AI technologies into society.
- **Knowledge Sharing**- It aims at accelerating the global understanding and mitigation of AI-related risks, promoting a culture of shared learning and continuous improvement in AI safety practices.

To know more about ethical artificial intelligence, click [here](#)

What are the global regulatory landscapes in Artificial Intelligence?

- **USA**- US had recently released a *Blueprint for an AI Bill of Rights*.
- **European Union**- It is discussing the promulgation of world's 1st comprehensive framework for regulation, which will define rules to govern the development and use of AI across EU.
- **China**- It outlined a broad set of principles for international cooperation and global governance of AI.
- **India**- Niti Aayog published a series of papers on the subject of Responsible AI for All.
- **United Nations** - UN Secretary-General Antonio Guterres has announced the creation of an advisory body that would address the international governance of AI with technology executives, government officials and academics.

EU plans to set European Board for Artificial Intelligence to audit and administer the new rules.

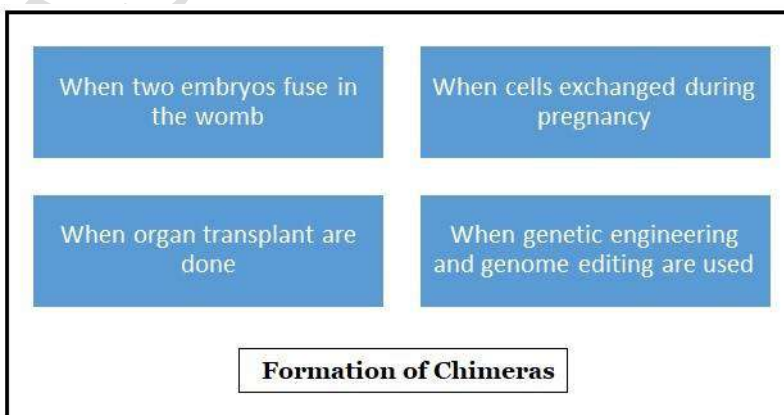
13.3 Chimeras of Nature

Why in news?

In a recent landmark study, scientists reported the successful generation of a live chimera in non-human primates.

What is chimera?

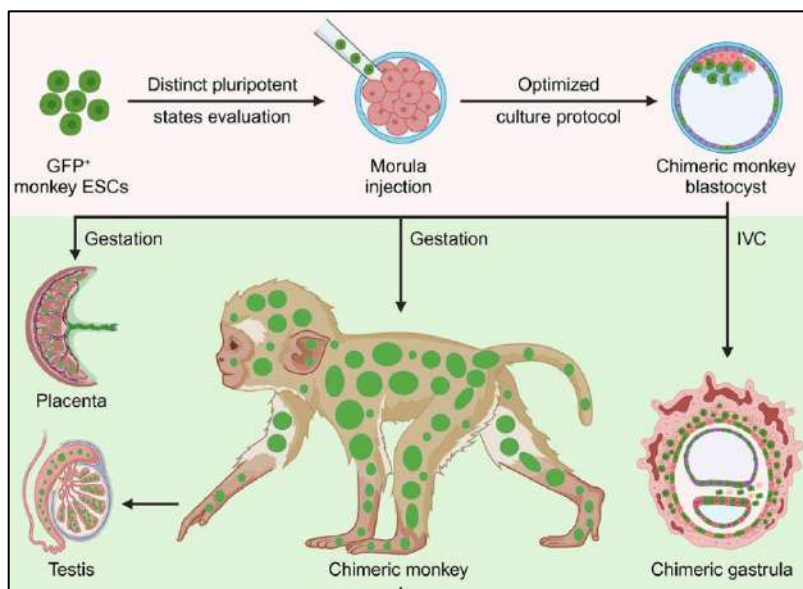
- In Greek mythology, a chimera was a fearsome creature with the combined features of a lion, a goat, and a snake.
- **Chimerism**- It is defined as a phenomenon of occurrence of more than one type of different and distinguished genotype in an organism.
- **Chimera**- It is defined as an organism composed of cells with different genotypes altogether.
- **Formation of chimera**- They can arise in several ways
- **Natural chimeras**- It also occurs in natural ways.
 - Example- Anglerfish, Sponges, Yellow Crazy Ants etc.,
- **Genetic Chimeras**- It happens when an individual is derived from two or more zygotes.



Types	About
Animal chimeras	It results from the merger of two or more embryos. They may possess blood cells of different blood types and subtle variations in form.
Plant chimeras	It can have distinct types of tissue originating from the same zygote due to mutation during ordinary cell division.
Hybrid chimeras	An individual where each cell contains genetic material from two organisms of different breeds, varieties, species or genera.
Organ transplantation	The tissues from a different genome are introduced to an individual. Example- Bone marrow transplantation can determine the recipient's ensuing blood type.

What are the key findings of the study?

- The stem cells from a *cynomolgus monkey* (crab-eating or long-tailed macaque) is combined with a genetically distinct embryo from the same monkey species.
- The cells were also infused with a green fluorescent protein so the researchers would be able to determine which tissues had grown out of the stem cells.
- The resulting chimeric monkey had cells of both genotypes in various tissues.
- It reported the successful generation of a live chimaera in non-human primates, which are evolutionarily close to humans.
- This is the 1st time scientists have succeeded in producing a live infant chimeric monkey.



What are the advantages and challenges of the chimeras?

Advantages	Challenges
<ul style="list-style-type: none"> Organ transplantation- Animals have been used to fulfil the organ demands by providing insulin, heart valves, etc. <ul style="list-style-type: none"> Human pig chimeras can potentially grow human-like organs that can be transplanted without rejection. Drug discovery- It can help researchers to test new drugs and therapies in more realistic models of human diseases. <ul style="list-style-type: none"> Human brain cells transplanted into mice can improve their cognitive abilities and mimic some aspects of human neurological disorders. Evolutionary studies- It can reveal insights into evolution and development of different species. <ul style="list-style-type: none"> Human-monkey chimeras can help to understand the similarities and differences between primates and human and how they diverged from common sense. 	<ul style="list-style-type: none"> Health issues- They may face health problems, such as infertility, autoimmune diseases, and psychological stress, due to the presence of cells from different species. Cross species disease- They may pose a risk of transmitting cross-species diseases to humans or other animals, especially if they have human-like organs or immune systems. Human identity- Chimeras may challenge the moral and legal status of both humans and animals, as they blur the boundaries between species and raise questions about their rights, dignity, and identity. Unintended consequences- They disrupt the natural balance of ecosystems, creating new ethical dilemmas, affecting public perception and acceptance of biomedical research. Animal welfare- The welfare of the animals is at risk due to mixing of human and animal cells.

What lies ahead?

- Chimeras should be created and used with caution and respect, and under strict regulations and oversight.
- Scientists involved in this field need to continue to discuss and consider the implications of their research with the broader community.

13.4 Emerging Technologies in Defence

Why in news?

Emerging technologies like artificial intelligence, cyber technology, etc. are vital for Indian military and defence organisations.

What is emerging technology?

- Emerging technologies** - It refers to innovative advancements or developments that have the potential to significantly change the way we live and work.

- These technologies arise from cutting-edge research and offer new opportunities for industries, economies, and societies.

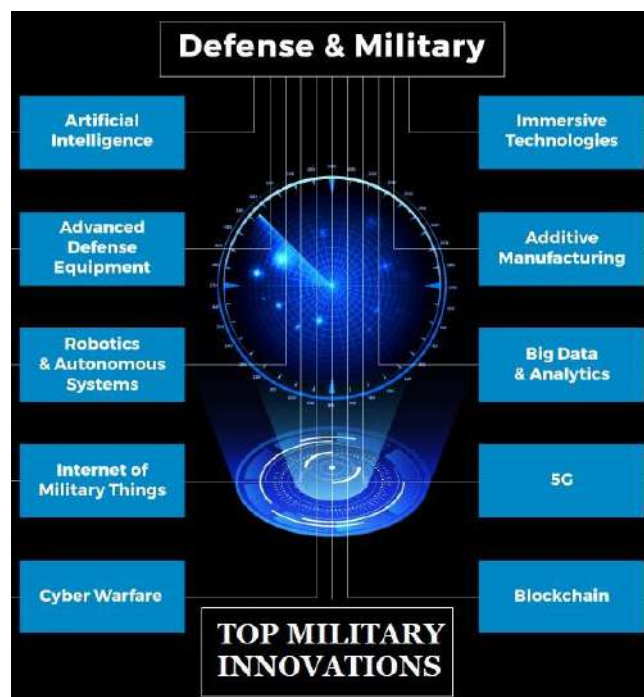
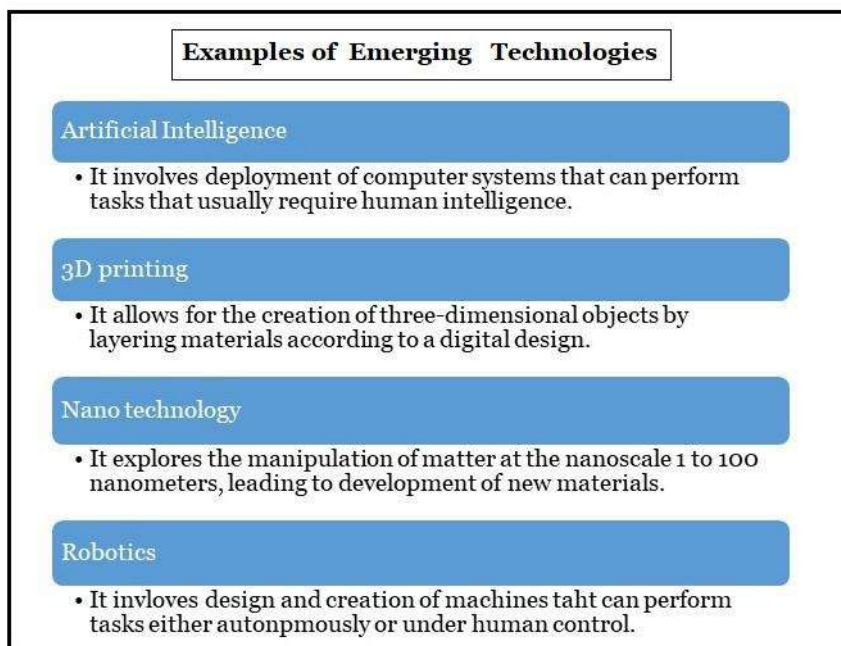
What steps were taken to use emerging technologies in Indian defence sector?

- **Chanakya Defence Dialogue-** It was held in 2023 which serves as a forum to *enhance national and regional security* by discussing contemporary issues, including the impact of emerging technologies.
- **Integrated Unmanned Roadmap-** It is a comprehensive plan for the development and deployment of unmanned systems in the *Indian Navy* that aims to achieve standardization, interoperability and jointness.
- **Project Swavlamban-** It is an initiative to promote Atmanirbhar (self-reliance) in the defence sector by encouraging indigenisation of defence equipment and technology.
- **AIDef-** Artificial Intelligence in Defence is a symposium held in 2022 that showcased cutting edge AI enabled solutions developed by industry, start-ups etc.,
- It includes Defence AI Council and Defence AI Project Agency that facilitates AI integration in defence.
- **Defence Cyber Agency-** It was launched in 2018 to handle cyber security threats and to develop cyber warfare doctrine.
- **Defence Space Agency-** It is responsible for operating space warfare and satellite intelligence assets of India.

To know about the AI in defence sector click [here](#)

What are the challenges in utilising emerging technologies in India?

- **Financial crunch-** India's defence spending is around **2.1% of GDP**, which is insufficient to meet the requirement of armed forces and the defence industry.
- **Lack of innovation-** India invests very little in research and development in emerging technologies compared to its global leaders.
- **Poor governance-** India's defence acquisition and procurement system is plagued by delays, corruption and red tapism.
- **Outdated-** The system is unable to cope with the fast paced and dynamic nature of emerging technologies, which require constant innovation and upgradation.
- **Lack of skills-** India faces a *brain drain* of its talent to foreign countries and industries and faces shortage of skilled and qualified personnel in emerging technologies.
- **Inefficiency-** India's armed forces operate in silos and lack interoperability among themselves and with the civilian sector.
- It hampers the effective integration and utilisation of emerging technologies, which require seamless coordination and collaboration across domains and platforms.
- **Lack of standardization-** India lacks a clear and coherent strategic vision and doctrine for the use of emerging technologies in defence.



- India has not articulated its objectives, priorities, and principles for the development and deployment of these technologies.
- It has not defined its thresholds, norms, and rules of engagement for their employment in conflict scenarios.

What lies ahead?

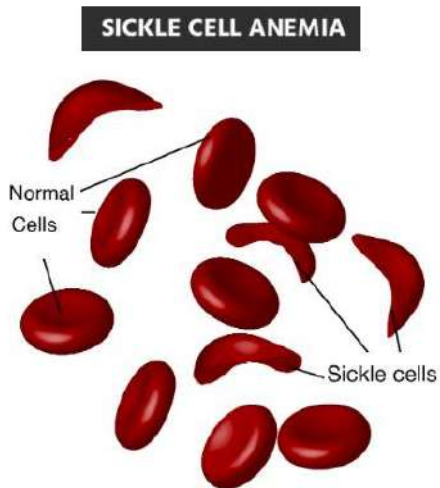
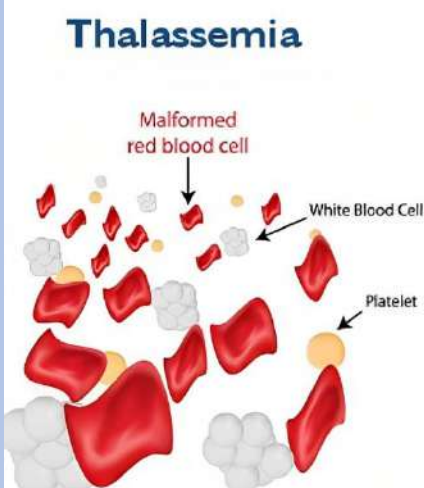
- **Collaborative defence**- India needs to foster jointness and interoperability among it selves and with the civilian sector, for effective utilisation of emerging technologies.
- **Transparency**- India needs to reform its defence acquisition and procurement system to make it more agile, transparent, and efficient.
- **Disruptive Human Resource**- India needs to improve its education system, create more opportunities for training and learning to retain and attract talent.
- **Doctrinal changes**- India needs to articulate a clear and coherent strategic vision and doctrine for the use of emerging technologies in defence.
- **Promote investment**- India needs to allocate more resources for R&D, especially in emerging technologies, to develop indigenous and cutting-edge capabilities.

13.5 Gene Therapy for Sickle Cell Anaemia

Why in news?

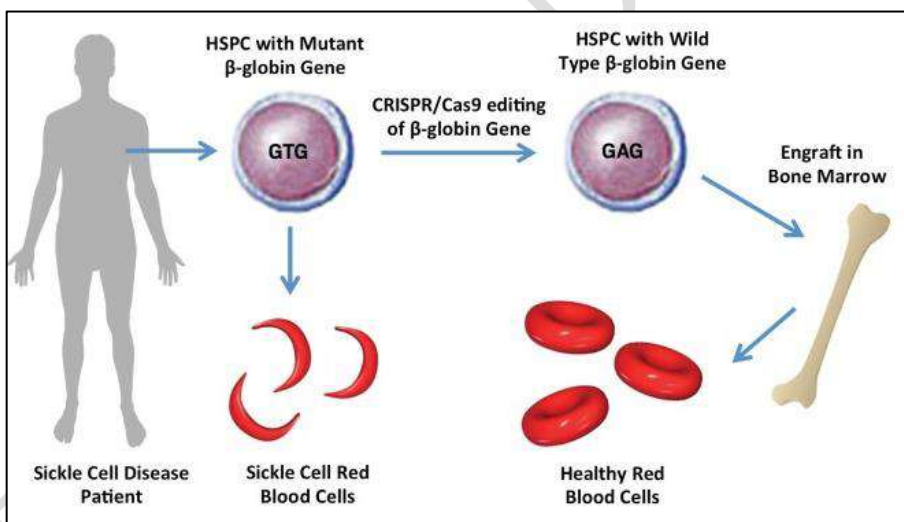
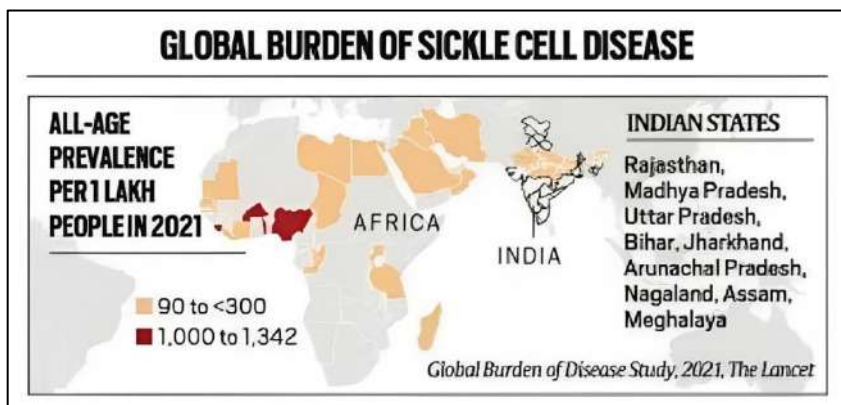
1st therapy based on Crispr-Cas9 for [Sickle cell disease](#) and Thalassaemia has been approved in UK.

What is sickle cell anaemia and thalassemia?

About	Sickle Cell Anaemia	Thalassemia
Disease	An inherited blood disorder where people who inherit a pair of genes from both parents experience symptoms like severe anaemia.	
Effect on haemoglobin chain	Caused by a mutation in the haemoglobin- β gene found on Chromosome 11 affecting <u>only the beta chain</u>	Production of <u>either the alpha or beta chains</u> is reduced resulting in either alpha-thalassemia or beta-thalassemia
Haemoglobin production	Mutation in haemoglobin chains makes them into a <u>crescent shape</u> under low oxygen level	Caused by reduced production of haemoglobin chains
Effects	Pain, fever, infection, stroke and organ damage	Fatigue, shortness of breath, irregular heartbeats and need blood transfusions throughout their life
Status in India	An estimated 30,000-40,000 children in India are born with the disorder every year.	India has the largest number of children with thalassaemia (about 1-1.5 lakh).
	 <p>SICKLE CELL ANEMIA</p> <p>The diagram shows several normal red blood cells (smooth, round) and several sickle cells (crescent-shaped). Labels point to 'Normal Cells' and 'Sickle cells'.</p>	 <p>Thalassemia</p> <p>The diagram shows a cluster of red blood cells, some of which are malformed (irregular shape). Labels point to 'Malformed red blood cell', 'White Blood Cell', and 'Platelet'.</p>
Treatment	Treated by blood transfusions, iron supplements, or stem cell transplants.	

What is Casgevy?

- Casgevy is the 1st licensed therapy in the world based on the gene editing technology Crispr-Cas9.
- Apheresis** - It is a one-time treatment for which the doctor has to first collect blood stem cells from the bone marrow using a process called apheresis (filtering out the blood for different components).
- The cells are then sent to the manufacturing site where it takes about 6 months for them to be edited and tested.
- Gene editing** - The therapy uses the patient's own blood stem cells, which are precisely edited using Crispr-Cas9.
 - So far, the only permanent treatment has been a bone marrow transplant, for which a closely matched donor is needed.
- A gene called BCL11A, which is crucial for switching from foetal to adult haemoglobin, is targeted by the therapy.
 - Foetal haemoglobin (naturally present in everyone at birth), does not carry the same abnormalities as adult haemoglobin.
- The therapy uses the body's own mechanisms to start producing more of foetal haemoglobin, alleviating the symptoms of the two conditions.
- Side effects**- They are similar to those associated with autologous stem cell transplants, including nausea, fatigue, fever and increased risk of infection.



What are the pros and cons of this treatment?

Significance	Challenges
Efficacy - It restores haemoglobin production and alleviates symptoms in most patients.	Limited authorization - It is currently approved in the UK only and is being reviewed by other regulatory bodies.
Pain reliever - It reduces the need for blood transfusions and pain crises in the patients.	Health inequity - It is expensive, thereby limiting the accessibility in poor countries.
Reliable - No serious safety concerns were reported, but long-term effects are still being monitored.	Inaccuracy - There are concerns with potential off targets effects of CRISPR editing, which could cause unwanted changes in other parts of the genome.

13.6 AI - Quantum Computing Confluence

Why in news?

Quantum Computing (QC) and Artificial Intelligence (AI) are arguably the two most transformative technologies of our era, pushing the boundaries of computation and cognition, respectively.

What is Quantum AI?

- It means the use of QC for computation of machine learning algorithms, which takes advantage of computational superiority of QC to achieve results that are not possible to achieve with classical computers.
- Quantum theory-**
 - Qubits-** It can exist in a superposition of two states (both 1 and 0), to encode and manipulate information.
 - Entanglement-** It is a phenomenon where two qubits can share a quantum state and influence each other, even when they are far apart.
- The potential outcomes are extraordinary as QC redefine the limits of speed and parallelism and AI reshape our understanding of intelligence and automation.

Key terms

Artificial Intelligence

- It is the simulation of human intelligence processes by machines, especially computer systems.
- It is designed to perform various activities which include speech recognition, learning, planning, problem solving.

Quantum Computing

- It is a rapidly-emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers.
- Quantum theory is a branch of physics which deals in the tiny world of atoms and the smaller (subatomic) particles inside them.

What is the significance of Quantum AI?

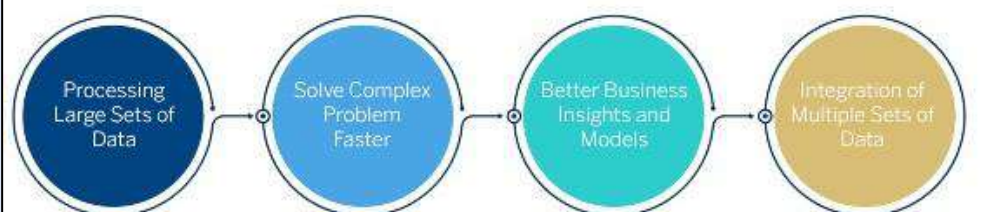
- Computational boost-** It enables to tackle more complex problems and achieve artificial general intelligence.
- Better automation-** Quantum AI can automate tasks such as optimization, simulation, and encryption that are difficult or impossible for classical computers.
- Improved security-** Quantum AI can enhance the security of data and communication by using quantum cryptography and quantum key distribution, which are immune to hacking.
- Faster data analytics-** They can process large amounts of data faster and more efficiently than classical computers, such as big data, quantum machine learning, and quantum neural networks.
- Effective machine learning-** It can improve the performance and accuracy of machine learning models and train them faster by using quantum enhanced learning.
- Simulation-** It can simulate complex systems that are beyond the reach of classical computers such as quantum chemistry, quantum biology and quantum physics.
- Optimization - Quantum annealing** is a quantum technique that can solve optimisation problems in AI and machine learning.
- It uses quantum tunnelling to escape local minima and reach global optima, which are the optimal solutions.

In 2019, Google's Sycamore quantum processor achieved quantum supremacy solving complex problems in about 200 seconds that would take classical supercomputers millennia.

Real Time Applications of Quantum AI

- Quantum Networking-** Leveraging quantum teleportation for transferring quantum states without the physical transfer of individual particles, paving the way for a 'quantum internet.'
- Healthcare-** Combining AI's pattern recognition with quantum computing's simulation abilities aids in advancements in drug discovery and personalised medicine.
- Climate Modelling-** Quantum-enhanced AI may lead to more accurate climate models, offering improved solutions to the climate crisis.

Applications of Quantum Computing and AI



What are the challenges with Quantum AI?

- **Prone to errors**- Quantum systems are highly sensitive to external disturbances, making them prone to decoherence.
 - Decoherence occurs when the fragile quantum state of a qubit is disrupted, leading to inaccuracies in calculations.
- **Complexity**- Traditional AI algorithms are not directly compatible with QC, hence new algorithms are needed for quantum systems.
- **Lack of skillset**- The scarcity of professionals with interdisciplinary skills of both AI and QC poses a hurdle in the widespread adoption of quantum AI.
- **Cybersecurity risks**- QCs could potentially break existing encryption protocols, enable malicious actors to access sensitive information and disrupt transactions or manipulate records.
- **Lack of neutrality**- Quantum AI could inherit or amplify the biases and unfairness of classical AI, such as discrimination, exclusion, or misrepresentation of certain groups or individuals.
- **Societal impact**- Quantum AI threatens privacy, increases inequality or causes ecological damage.

What lies ahead?

- The convergence of quantum computing and artificial intelligence signifies not merely a technological leap but a quantum leap.
- The symbiotic relationship between these disciplines has the potential to reshape our digital future.
- The need of the hour is collaboration and ethical frameworks to use these technologies responsibly.

14. INTERNAL SECURITY

14.1 National Security Strategy

Why in news?

India is working on its first-ever national security strategy document after years of deliberations in the military and strategic community.

Security Architecture in India

- After India became a nuclear-weapon state in 1998, the national security architecture underwent a significant change.
- At the apex, a **National Security Council (NSC)** was set up with the Prime Minister (PM) as the Chairman.
- Its permanent members included ministers of home, defence, external affairs and finance.
- A new post of **National Security Advisor** was created to serve as the Secretary of the NSC.
- In addition, a **Strategic Planning Group (SPG)** was established under the chairmanship of the Cabinet Secretary.
- A **National Security Advisory Board (NSAB)** was also set up.
- It comprised of a number of retired civil and military officials, and it had direct access to the PM.
- After the Kargil war in 1999, a **Defence Intelligence Agency** was set up to coordinate military-related intelligence.
- Also, a **Nuclear Command Authority (NCA)** was set up to manage India's nuclear weapon arsenal.

What is National Security Strategy?

- **NSS** - A National Security Strategy (NSS) document outlines the country's security objectives, and the ways to achieve these.
- It defines traditional, non-traditional threats and opportunities while introducing accountability of agencies tasked with the implementation of such responsibilities.

- **History** - The NSS of India has not been defined since its Independence in 1947.
- Earlier 3 attempts has been made (2007, 2019 and 2021) to come out with the national security strategy, but there was hesitation at the political level.
- **Significance of NSS** - The strategy will cover the entire range of traditional and non-traditional threats facing India, such as financial, energy, information, and environmental security.
- It will guide the military and security reforms and provide a holistic view of the national security.
- NSS will reflect India's response to the rising geopolitical tensions and uncertainties in the world.
- The document will be made public and updated regularly based on emerging situation and newer threat assessments.

Why India needs a National Security Strategy?

- **Resource utilisation**- The strategy will help in optimal utilisation of India's comprehensive national power and resources.
- **Address vulnerabilities**- India's border is linked with large scale smuggling and contraband trade that permits channels through which terrorists and criminals find easy access.
- **Technology driven world**- NSS would enable the identification of critical infrastructure that may be vulnerable to cyber-attacks, and the development of human resources capable of identifying attacks and protecting and restoring critical systems.
- **Nuclear security**- The country's nuclear deterrent must deal with the challenge of two nuclear-armed neighbours namely China and Pakistan.
- **Dynamic nature**- The only political direction to the Armed Forces in existence is Raksha Mantri's operational Directive of 2009 which is outdated and needs to be revised.
- **Jointness**- There has to be a national defence doctrine to achieve synergy, coordination and jointness among the three services and to enhance their combat effectiveness and operational readiness.

Global Regulatory Landscape

- **US**- The main pillars of NSS 2022 is strengthening democracy, revitalizing alliances, building inclusive global economy, and defending America and deterring aggression.
- **UK**- It covers a range of diverse but interdependent threats, such as terrorism, cyber-attacks, natural disasters, and international military crises.
- **Russia**- NSS 2021 reflects the country's willingness and ability to defend its national interests and values in the face of the complex and dynamic challenges of the 21st century.
- **China**- Comprehensive National Security strategy is closely tied to its governance structure.
- **Pakistan**- National Security Policy 2022-2026, underlines national security objectives and priority areas.

What components must the NSS encompass?

- **Climate change**- NSS should anticipate the consequences of ecological degradation such as melting of glaciers, sea level rise, large scale migration of population and formulate coping measures.
- **Internal security**- The strategy must address the internal security threats such as inequality, erosion of institutions, lawlessness and centre-state relations.
- **External security management**- The doctrine should emphasise the need to restore deterrence against India's adversaries, especially China, and to pursue the goal of transforming India into a modern, prosperous and secure country.
- **Strategic communication**- NSS must be integrated with strategic communication, particularly in a democracy, to shape public perceptions through constant and consistent public outreach and to provide a channel for public opinion or feedback.

What lies ahead?

- NSS must be executed within the parameters laid down by the Constitution of India and the country's democratic political dispensation.
- NSS should be citizen-centric, constitutionally guided, and democratically accountable.
